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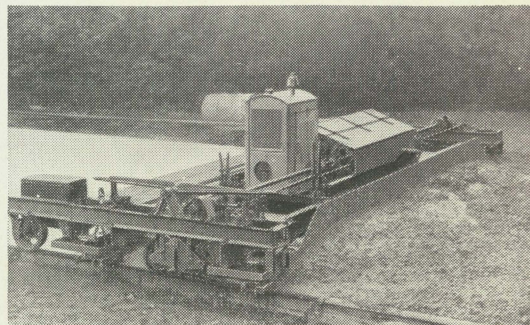
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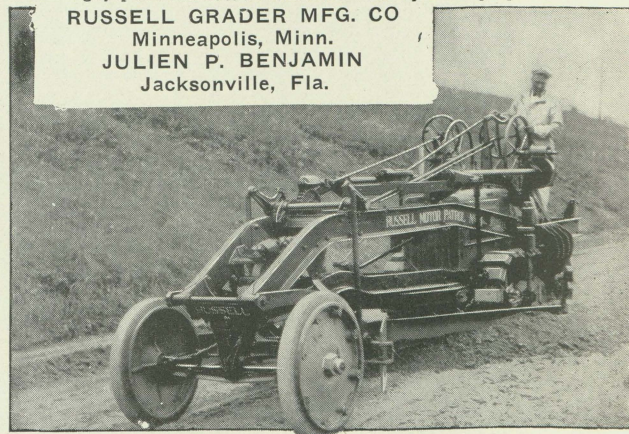
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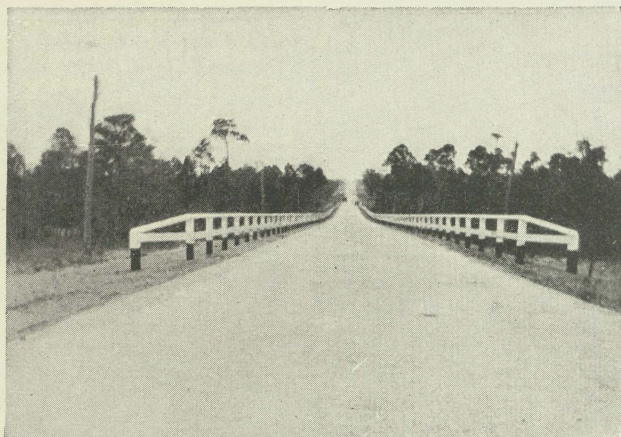
Minneapolis, Minn.

JULIEN P. BENJAMIN

Jacksonville, Fla.



FLORIDA HIGHWAYS



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State Road Number Five

Prepared by the Editor and Office Engineer

WE COME now in regular sequence to a brief article on State Road No. 5. It was our hope, as announced last month, that this article would be written by the State Highway Engineer, but the manifold duties devolving upon that official have made it impossible for him to prepare it, and again the Office Engineer and editor collaborate in the setting forth of the route and characteristics of the road.

Route and Location

By legislative enactment which governs the designation of all roads in the State system, State Road No. 5 is defined as follows:

"Road No. 5.—Extending from High Springs to Fort Myers, via Newberry, Archer, Williston, Dunnellon, Inverness, Brooksville, Lutz, Tampa, Riverview, Bradenton, Sarasota, Venice and Punta Gorda."

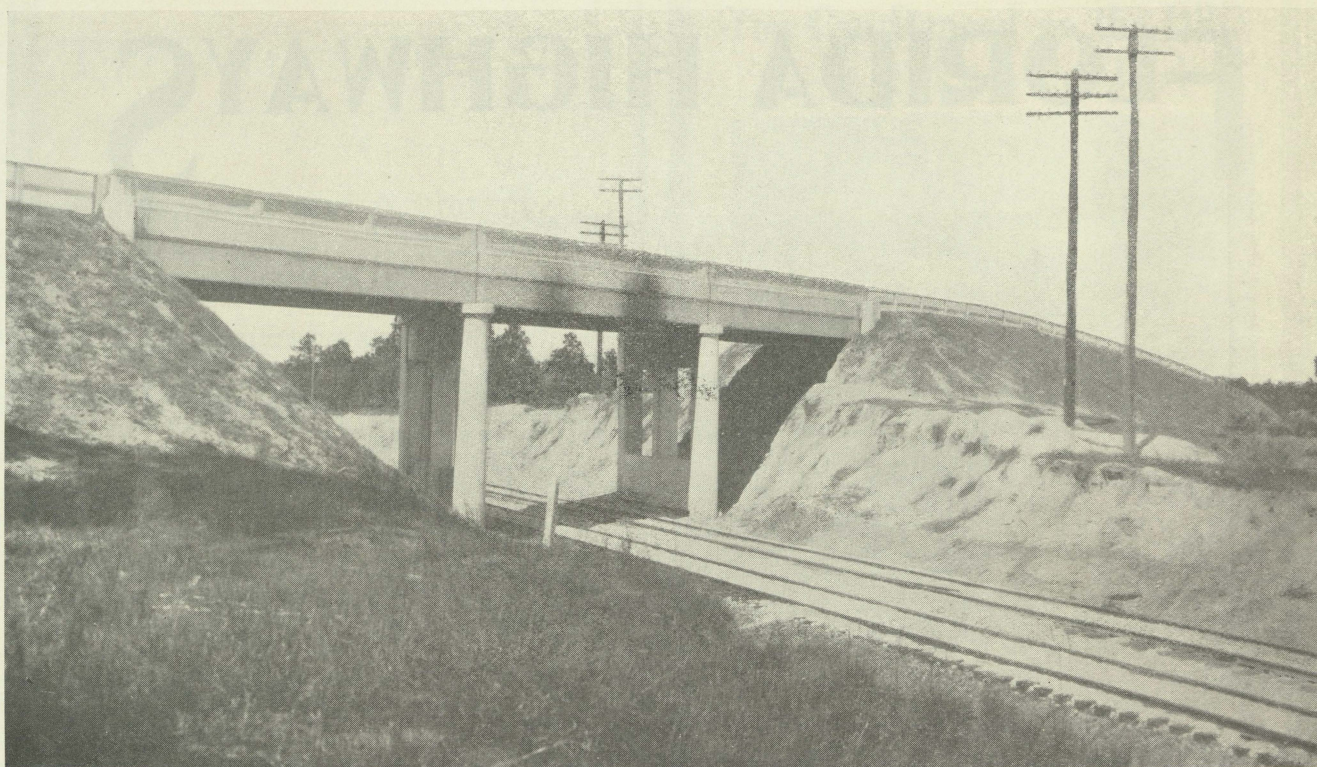
It is the first of the roads with which we have dealt which is not an interstate road, but on account of its connections it is fed by at least two great interstate highways with traffic bound for the southwest coast of Florida. Traffic entering the State over either Road 2 or Road 1 and bound for the southwest coast finds its most direct route by using State Road No. 5 from High Springs south. In addition, as a matter of fact, by turning east over Road 13 at Archer and proceeding thence northward through Gainesville to Baldwin and thence east over State Road No. 1 into Jacksonville, the traveler between Tampa and Jacksonville finds this his shortest and most direct route.

In connection also with Road 19, which is now nearing completion, and which it intersects at Williston, it will furnish the shortest route between Tampa and the southwest coast cities and Tallahassee, the capital. From what has been said, the importance of this great highway is apparent, and much could be added by way of elaboration.

Rivers

Many and beautiful are the streams which are crossed by State Road No. 5 in its course between its termini. Commencing with the Withlacoochee at Dunnellon, it crosses a county bridge which will be replaced by a bridge of State construction. The next important stream is the Hillsborough River, north of Tampa, where there will be found a modern concrete bridge. Bullfrog Creeks (Nos. 1 and 2) and Little Manatee River, all in Hillsborough County, are spanned by concrete structures, while the Manatee River between Bradenton and Palmetto is the scene of the majestic concrete bridge lately constructed by the State at a cost of approximately one million dollars. Southeast of Venice, the road crosses the Myakka River on a county bridge which will be replaced by State construction, while the same can be said of Charlotte Harbor and the Caloosahatchee River at Fort Myers, the southern terminus of the road, and the beautiful City of Palms.

All these are beautiful streams, many of them combining with the natural attractiveness of a water scene a tropical growth of vegetation seldom excelled anywhere. A trip over this road further justi-



Road 5. Overhead Crossing over A. C. L., near Inverness

fies our comment, often made, that the highways of Florida are peculiarly fortunate in their natural beauty and grandeur.

Present Status

Perhaps the most interesting feature in connection with a discussion of the present status of the road is to state that it is even now wholly paved between its northern and southern termini.

Beginning at the northern end of the road at High Springs, one travels over a surface-treated State-built road across Alachua County to the Levy County line. Through Levy County there is a county-constructed lime-rock base which has been surface-treated by the State. This particular stretch of the road is without shoulders and the location encounters many curves and turns which must be straightened and eliminated when it is replaced by State construction. At the Marion County line surface-treated lime rock base construction is again encountered which extends through Marion, Citrus and Hernando Counties to Brooksville. From Brooksville south to the Pasco County line there is 9.15 miles of State-built sheet asphalt construction, and across Pasco County, the construction is again surface-treated lime rock base.

From the northern line of Hillsborough County into Tampa, one travels over asphalt block pavement constructed by the county with the assistance of the State, and from Six-Mile Creek to Riverview we have again 12.10 miles of surface-treated rock base construction. Asphalt block constructed by Hillsborough County with State assistance forms the type of that stretch from Riverview to the Manatee County line. Across Manatee County bituminous macadam pavement leads one to the Sarasota County line where sheet asphalt is again encountered stretching in that county to Venice. Here we en-

counter the road in its preliminary stage of construction on a new location, namely, clearing, grubbing and grading and necessary drainage structures on the approximately twelve-mile stretch between Venice and the Myakka River. Surface-treated lime rock base is again the type from the Myakka River on, and this continues through Charlotte and Lee Counties to the Caloosahatchee River at Fort Myers.

In the article prepared and furnished last month by Mr. Cannon, assistant State Highway Engineer, with reference to State Road No. 4, he adopted the novel and interesting plan of an imaginary ride over the entire route of the road. Such a method would prove as valuable and interesting in connection with State Road No. 5, but unfortunately it is not possible to those of us who have not his complete familiarity with the entire route. It has been necessary for us, therefore, to deal in the main with statistical data which, however, we hope will prove of interest and value.

In our recital we have made no mention of certain important projects which the State has completed on this road, and it would not be fair to leave the subject without mentioning them. We refer to the railroad crossings which have accomplished a separation of grades and made these crossings absolutely safe. The first is a concrete and steel overhead crossing in Citrus County, near Dunnellon, 247 feet in extent. In Citrus County there are two other overhead crossings of concrete and timber and of an aggregate length of 224 feet. Also a timber overhead in Hernando County, just south of Brooksville, 183 feet in length.

Summary

To summarize, we find that on the location of State Road No. 5, there are 165.04 miles of surface-treated lime rock base; 23.2 miles of asphalt block;

31.11 miles of sheet asphalt; 15.81 miles of bituminous macadam, and 11.92 miles of clearing, grubbing and grading under construction. In addition there are 5,089 feet of bridge construction spanning rivers, streams and railway crossings.

Conclusion

We should fail to emphasize one of the most important features of this great highway if we did not refer to its place in what has been called the "Loop System," by reason of the fact that at its lower extremity it forms a part of what is known as the Tamiami Trail. From Tampa to Fort Myers, it is a part of the Tamiami Trail proper, and at the latter point it connects with Road 27, which forms the

trans-State section of the Trail between Miami and the west coast. Thus it will be seen that when the latter road is completed there will be afforded a "loop" highway around the State, that is to say, down the east coast along Road 4 to Miami, thence westward to Fort Myers over Road 27, and thence northward over Road 5 to Tampa, and thence north along the Gulf coast to the northern section of the State.

We have chosen for inclusion in this issue a number of views of the newer projects on State Road No. 5, as well as some of the better known scenes, and it is hoped that these will afford, as we cannot, an adequate idea of the importance and beauty of the road.



Road 5. Between Inverness and Floral City, Citrus County

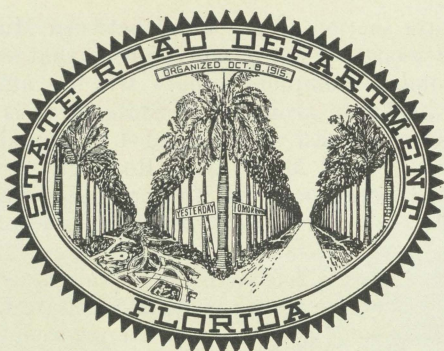
The State Road System

THE following is a list of the roads in the State System as designated by the Legislature of Florida, which roads have been by resolution of the Department at its October meeting, re-numbered in accordance with the direction of the Legislative Session of 1927. It is to be noted that this is simply a statement of the numerical designation of each road which has been included in the system, and does not set out the preferential status as also fixed by legislative enactment.

At the 1927 session, many additional roads were designated as a part of the State System, and in order to avoid confusion and prevent duplication the State Road Department was directed to give to such roads the proper numerical designation. This was done by resolution of the Department at its quarterly meeting in October, and the following is the list of all roads included in the State Road System:

Road No. 1.—Extending from the Alabama State Line at Nunez Ferry to Jacksonville, passing through Pensacola, Milton, Crestview, DeFuniak Springs, Bonifay, Chipley, Marianna, Chattahoochee, Quincy, by or near Havana, Tallahassee, Monticello, Greenville, Madison, Live Oak, Lake City, Sanderson, Macclenny and Baldwin.

Road No. 2.—Extending from the Georgia State Line north of Jennings to Fort Myers, via Jasper, White Springs, Lake City, High Springs, Gainesville, Ocala, Leesburg, Lisbon, Grand Island, Eustis, Mt. Dora, Plymouth, Apopka, Orlando, Kissimmee, Haines City, Bartow, Arcadia, and Olga Bridge; also from Leesburg to Lakeland, via Mascotte, Groveland, Buck Hill, Polk City, Foxtown to Lakeland; also from Silver Lake Forks, about four miles east of Leesburg, Lake County, via Tavares, to Mount Dora, to be built with county funds and with Federal aid.



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Road No. 3.—Extending from the Georgia State Line at a point on the St. Mary's River known as Wild's Landing, to Orlando, via Jacksonville, Orange Park, Green Cove Springs, Palatka, East Palatka, Crescent City, DeLand and Sanford.

Road No. 4.—Extending from the Georgia State Line south of Folkston to Miami, via Hillard, Callahan, Jacksonville, St. Augustine, Bunnell, Daytona, Titusville, Fort Pierce, West Palm Beach and Fort Lauderdale.

Road No. 4-A.—Extending from Miami to Key West, via Key Largo, provided on that portion of the road south of Dade County, Monroe County shall expend \$2,000,000, including the amount already expended on said road, and in addition to said \$2,000,000 shall provide one-third of the cost of the bridges from No-Name Key to Knight's Key and from Grassy Key to Lower Matakumbe.

Road No. 5.—Extending from High Springs to Fort Myers, via Newberry, Archer, Williston, Dunnellon, Inverness, Brooksville, Lutz, Tampa, River-view, Bradenton, Sarasota, Venice and Punta Gorda.

Road No. 5-A.—Is the extension from High Springs to Perry, via Fort White, Branford and Mayo.

Road No. 6.—Extending from the Alabama State Line south of Dothan to Port St. Joe, via Campbellton, Marianna, Altha, Blountstown, Scotts Ferry and Wewahitchka.

Road No. 7.—From Pensacola to Alabama State Line at Flomaton.

Road No. 8.—Extending from Haines City to Fort Pierce, via Lake Wales, Frostproof, Avon Park, Sebring, DeSoto City, Lake Annie and Okeechobee City.

Road No. 9.—Extending from the Georgia State Line south of Quitman, via Madison, to a point on Road No. 35, near Shady Grove.

Road No. 10.—Extending from the Georgia State Line near Beachton to Pensacola, via Tallahassee, Woodville, Newport, and as near St. Marks as practicable, and thence around the coast to Panacea Springs, St. Teresa, Lanark, also via Wakulla, Crawfordville, Sopchoppy, Carrabelle, Apalachicola, Port St. Joe, Panama City, Bruce, Freeport, Portland, New Valparaiso, Camp Walton, and thence into State Road No. 1 at or near Milton, and thence over State Road No. 1, connecting with Pensacola.

Road No. 11.—Extending from a point on the Georgia State Line south of Thomasville via Monticello to Capps.

Road No. 12.—Extending from the Georgia State Line on the Bainbridge and Quincy Road, via Greensboro, Bristol and to East Point.

Road No. 13.—Extending from Cedar Key to Yulee, in Nassau County, via Bronson, Gainesville, Starke, Baldwin and Callahan; extending in an easterly direction from Yulee through Fernandina to the Atlantic Ocean, over and along that certain Twelve-Mile stretch of new concrete road just completed by Nassau County.

Road No. 14.—Extending from a point on Road No. 19, at the Suwannee River Bridge, near Old Town to Hastings, on Road No. 4, via Trenton, Newberry, Gainesville and Palatka.

Road No. 15.—Extending from a point on Road No. 10, at or near Newport, thence southerly along the Gulf as near as practical, to St. Petersburg, via



Road 5. Project 614. Sarasota County. 8-inch Lime Rock Base, 3-inch Topeka Type Surface, South of Laurel

or near as practical to the mouths of the Steinhatchee and Suwannee Rivers, Cedar Key, and as near as practical to the mouth of the Crystal River, Homosassa, Weekiwachee Rivers, Aripeka, Hudson, New Port Richey, Tarpon Springs, Clearwater and Largo. And also from Brooksville to Aripeka, via Spring Hill.

Road No. 16.—Extending from Ocala to Road No. 5, via Dunnellon, thence to Crystal River.

Road No. 17.—Extending from Haines City to Clearwater, via Lakeland, Plant City, Tampa and Oldsmar; also from Haines City eastward to a point intersecting Road No. 24 at Deer Park, in Osceola County.

Road No. 18.—Extending from Sarasota to Lake Annie, via Arcadia; and Road No. 18-A, extending from a point on Road No. 5, near Bradenton, via Oneco, intersecting Road No. 18 at a point about thirty miles east of Sarasota.

Road No. 19.—Extending from Tallahassee to Ocala, leaving out of Tallahassee on the St. Augustine Road thence to or near Chaires via Waukeenah, Capps and Lamont, thence direct to Perry, Cross City, Old Town, Chiefland, Bronson and Williston.

Road No. 20.—Extending from Cottondale to Panama City, via Round Lake, and from Cottondale north to connect with Road No. 6.

Road No. 21.—Redesignated to extend from Daytona Beach to DeLand, thence from DeLand to Eustis, via Crow's Bluff and Cassia.

Road No. 22.—Extending from Orlando to Indian River City, via Ft. Christmas; also from Orlando to Crystal River, via Winter Garden, Clermont, Mascotte, Groveland, Bushnell and Inverness.

Road No. 23.—Extending from Ocala to Palmetto, via Bushnell, Dade City, Plant City, and also from

Bushnell to Lakeland, via Webster, Tarrytown, and making connection with State Road No. 17 at or near as practical the center of the southeast quarter of Section 14, Township 28, Range 23.

Road No. 24.—Extending from Kissimmee to Melbourne, via St. Cloud.

Road No. 25.—Extending from Olga Bridge to West Palm Beach.

Road No. 26.—Extending from a point on Road No. 8, near Lake Annie, to Fort Lauderdale, via Moore Haven; and also an extension beginning at the City of Miami and proceeding northwesterly along or in proximity to the Miami Canal to a point approximately west of the city of Fort Lauderdale, and thence by the most practical route to intersection with State Road No. 26.

Road No. 27.—Extending from Ft. Myers to Miami.

Road No. 28.—Extending from Lake City to Bunnell, via Palatka, Lulu, Lake Butler, Starke and Keystone Heights.

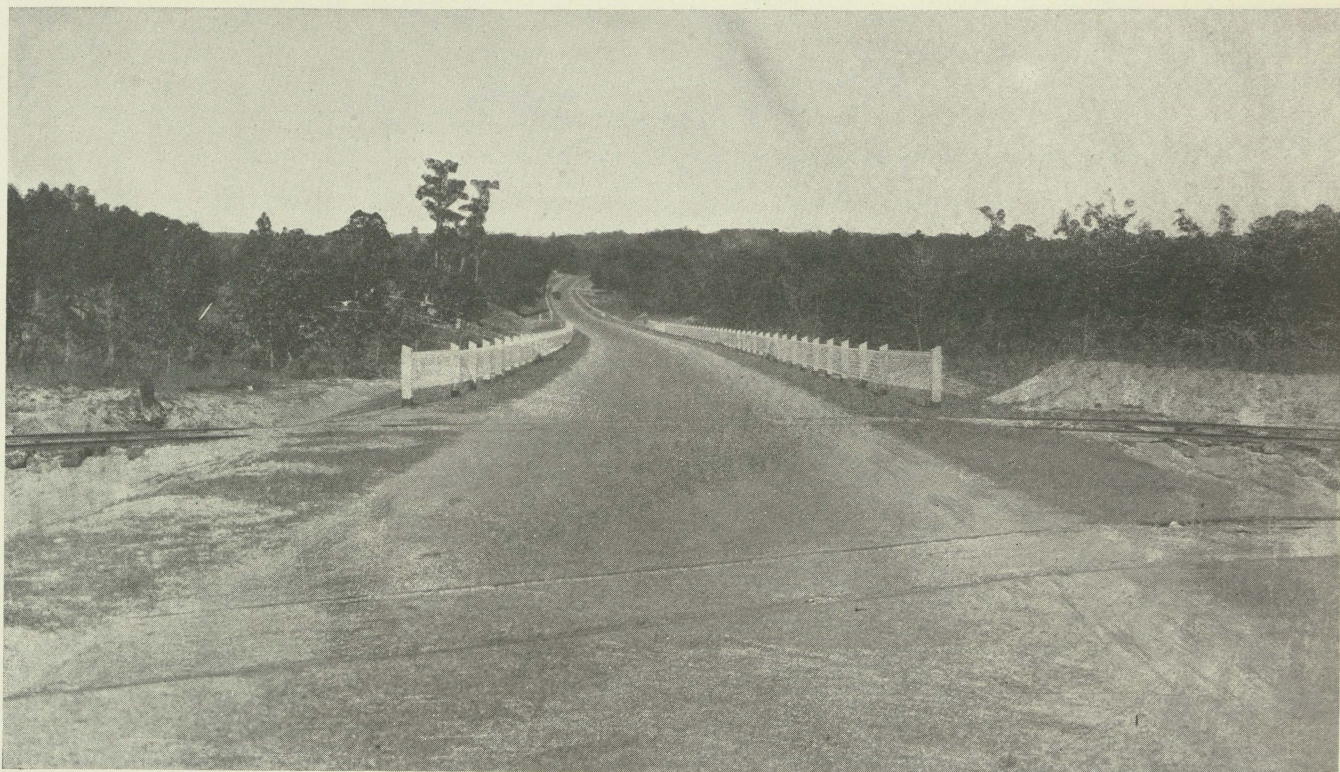
Road No. 29.—Extending from Bithlow to Moore Haven, via Holopaw, Kenesville and Okeechobee.

Road No. 30.—Also from Frostproof to Vero, via Dougherty Crossing and Yeehaw.

Road No. 31.—Road from Ocala to Waldo, via Citra, Island Grove and Hawthorne.

Road No. 32.—From Bradenton to Avon Park by way of Parrish, Fort Green and Wauchula; also an extension from Avon Park, eastward through Highlands County, Florida, over what is known as the Kissimmee River Road, a distance of approximately twenty miles and then in a northerly direction through the most practical route to a point where same will intersect State Road No. 30.

Road No. 33.—Extending from the Alabama State



Road 5. Citrus County. Between Floral City and Brooksville. Surface Treated

Line south of Floral via Laurel Hill to a point on Road No. 1 at or near Crestview.

Road No. 34.—Extending from Brooksville to Dade City via Spring Lake and Blanton.

Road No. 35.—Extending from the Georgia Line through Ashville and Greenville to a point on Road No. 19.

Road No. 36.—Extending from Leesburg to Inverness via Wildwood and Rutland.

Road No. 37.—Extending from Alabama State Line at Dixonville via Allentown to State Road No. 1 at Milton.

Road No. 38.—Extending from Road No. 2 at Weirsdale, east to Umatilla in Lake County, by way of Stark's Ferry.

Road No. 39.—Extending from the Alabama State Line through Bonifay to Vernon and thence southerly to Phillips Inlet.

Road No. 40.—Extending from the Alabama State Line south of Floral, Alabama, to DeFuniak Springs, Florida, and thence southerly to Freeport, and to Choctawhatchee Bay on the west side of La-Grange Bayou.

Road No. 41.—From Milligan via Baker and Blackman to the Alabama State Line.

Road No. 42.—Extending from a point on Road No. 1, north of Aucilla, through Aucilla to Lamont and to the Taylor County Line, at or near Walker Springs.

Road No. 43.—Extending from a point on the Georgia Line southerly through Miccosukee to a point on Road No. 1 and over same easterly to a point north of Lloyd and then southerly through Lloyd and Wacissa to a point on Road No. 15.

Road No. 44.—Beginning at Mims and extending to Mount Dora via Southmere, Geneva, Sanford and Sorrento.

Road No. 45.—Extending from Ocala to Daytona;

and also to extend from State Road No. 45 ten miles east of Ocala, Marion County, Florida, to run in a northeast direction to Bruce, thence to Salt Springs, thence to Norwalk, thence to Welaka, Putnam County, Florida.

Road No. 46.—Extending from the Alabama State Line near Flomaton, Alabama, to Baker, Florida, via Jay, Berrydale and Munson.

Road No. 47.—Commencing at a point on Road No. 4, south of Goodbys Lake in Duval County, running thence southerly as near as practicable along the St. Johns River to a point on Road No. 14, thence to East Palatka.

Road No. 47-A.—Palatka to Ocala via Rodman, Orange Springs and Citra.

Road No. 48.—Extending from St. Augustine to Starke, via Green Cove Springs; and also beginning at the intersection of State Road Nos. 48 and 13 in the town of Starke, Bradford County, Florida, and extending to State Road No. 49 by way of the Stockade and through the State Farm.

Road No. 49.—Extending from the Georgia State Line approximately north of Macclenny to Newberry via Macclenny, Manning, Sapp, Raiford, Lake Butler, Worthington Springs and Alachua.

Road No. 50.—Suwannee River Scenic Highway. Extending from Branford to Jasper, via Live Oak, crossing the Suwannee River at Branford and extending in a southerly direction via Old Town to intersect with State Road No. 19.

Road No. 51.—Extending from Orlando to Brooksville via Groveland, Riverland and Spring Lake.

Road No. 52.—Extending from the Alabama State Line north of Graceville, through Graceville and to the Washington County Line north of Chipley, thence through Chipley to bridge across North Bay near Southport and extending from Graceville via Jacobs to connect with Road No. 6.

Road No. 53.—Extending from Camp Walton along Santa Rosa Sound as near thereto as practicable to Town Point.

Road No. 54.—Extending from Crestview by way of Valparaiso to Camp Walton on Road No. 10.

Road No. 55.—Extending from a point at or near Pierson on Road No. 3 to Road No. 2 at Smithwick's Filling Station, in Lake County, through Astor, Umatilla, Eustis, Tavares, Minneola and Clermont.

Road No. 56.—Extending from Ellisville to Lake Butler via Providence.

Road No. 57.—Extending from New Smyrna to Sanford.

Road No. 58.—Extending from the Georgia State Line near Darsey connecting with Road No. 1 at or near Havana.

Road No. 59.—Commencing at Zolfo Springs, in Hardee County to Crewsville, thence to DeSoto City, thence to a point at or near Ft. Bassenger, crossing steel bridge over the Kissimmee River at this point, thence in the most advisable or acceptable route to Okeechobee City.

Road No. 60.—A road leaving the Alabama State Line at a point where the Alabama State Highway System strikes the north line of Walton County, Florida, at or near Gaskin, thence to State Road No. 1, in DeFuniak Springs, Florida.

Road No. 61.—Extending from Polk City to Auburndale.

Road No. 62.—Extending from Road No. 7 on Alabama State Line via Berrydale, Munson, Baker, and connecting with Road No. 1 at Milligan.

Road No. 63.—Zolfo Springs to Bradenton via Oneco.

Road No. 64.—Extending from Largo to the Gandy Bridge via North St. Petersburg, in Pinellas County.

Road No. 65.—Extending from a point south of Gainesville on State Road No. 13, in a southwesterly direction to a point on State Road No. 5 at or near Williston.

Road No. 66.—Extending from Tallahassee to a point on Road No. 20 via Jackson Bluff, Bristol and Blountstown.

Road No. 67.—Extending from State Road No. 8 at a point known as Lake Annie, thence to Venus, Palmdale, Board Hammock, Main's Corner, Moore Haven, Liberty Point and Clewiston.

Road No. 68.—Beginning at Orange Park, Clay County, Florida, and extending through Middleburg, Keystone Heights, Hampton and Brooker to Worthington Springs.

Road No. 69.—Connecting with State Road No. 1 at Live Oak, in Suwannee County, Florida, thence extending in a southwesterly course through Suwannee County, Lafayette County and Taylor County to a point on or near the Gulf of Mexico at the mouth of the Steinhatchee River, in Taylor County, via Luraville on the Suwannee River, Mayo, Cook's Hammock and Clara.

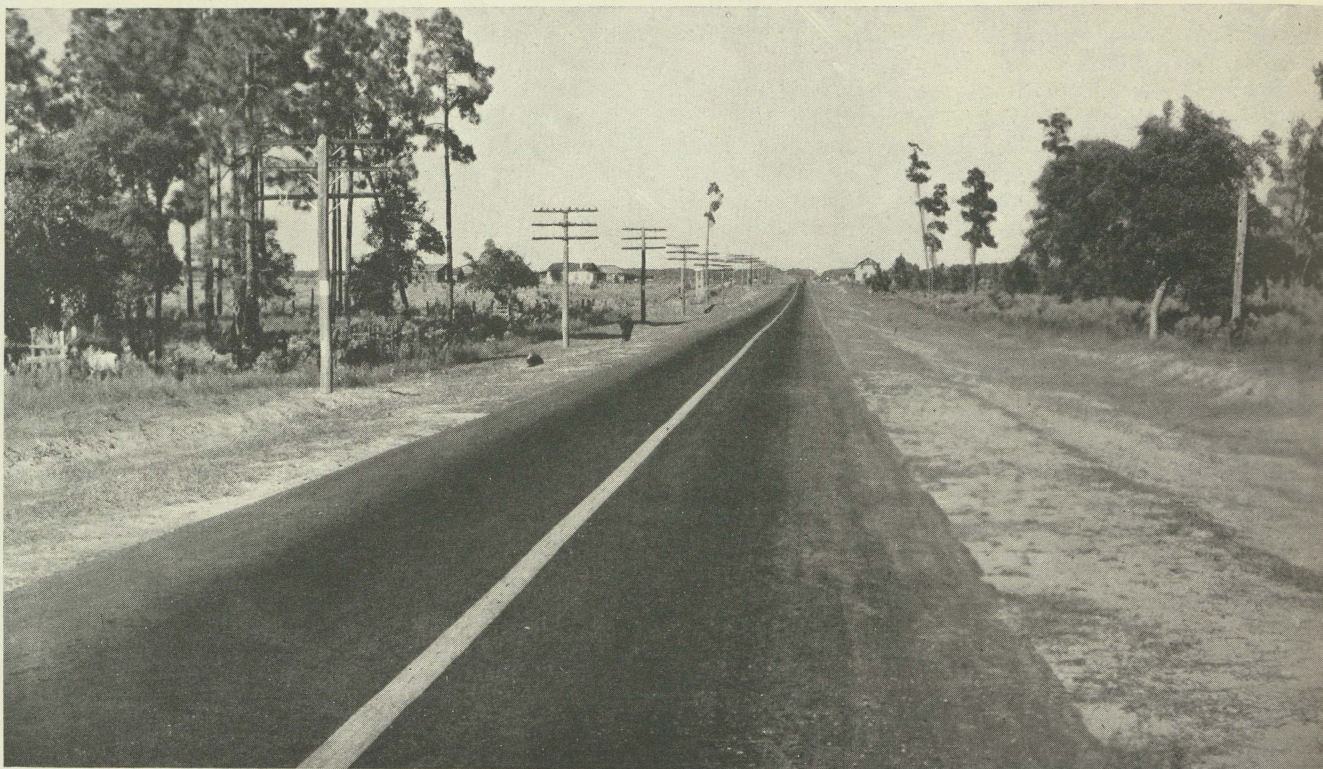
Road No. 70.—Extending from State Road No. 23 in the City of Sumterville, at a point at the intersection of State Road No. 23 with range line dividing Ranges 22 and 23; thence running south along said range line dividing Ranges 22 and 23 in the City of Webster.

Road No. 71.—Extending from the east side of the Withlachoochee River at and near a point east of Croom, Florida, thence running eastwardly and northeastwardly to Coleman, Florida, by way of St. Catherine, Webster, Center Hill to Coleman, making intersection with State Road No. 23.

Road No. 72.—Beginning at State Road No. 4, in the Town of Bunnell, in Flagler County, Florida, and running in a northeasterly direction along the present highway known as the Moody Boulevard to a point in the Town of Flagler Beach, where it intercepts a highway known as the Ocean Shore Boulevard, leading from St. Augustine, Florida, in a southerly direction to Daytona Beach, Florida.



Road 5, Lee County—Florida Lime Rock Base.



Road 5. Project 545. Hernando County

Road No. 73.—Extending from Monerief Corner to Dellwood via Bayview, in Pinellas County.

Road No. 74.—Beginning at State Road No. 19 at Chiefland, Florida, and extending to Road No. 13, at or near Sumner.

Road No. 75.—Extending from DeLand to New Smyrna, in Volusia County.

Road No. 76.—Extending from Quiney, Gadsden County, by or near Midway to Tallahassee, Leon County.

Road No. 77.—Commencing at a point on State Road No. 5-A between Branford and the Ichucknee River, and proceeding southward across the Santa Fe River, through the towns of Bell and Trenton to a point on State Road No. 19 near Bronson, in Levy County.

Road No. 78.—That concrete road thirty-two (32) feet wide, constructed by Duval County, from the city limits of South Jacksonville to the Atlantic Ocean at Atlantic Beach, and the road continuing thence through Jacksonville Beach and to the northern limits of the City of St. Augustine, in St. Johns County, Florida.

Road No. 79.—Extending from Wewahitchka over the route now designated and followed by present Wewahitchka-Panama City County Road.

Road No. 80.—To extend from State Highway No. 28 at Keystone Heights to run thence southerly to Melrose, thence in a southwesterly direction between the lake and prairie to a point on State Highway No. 14 at or near McMeekin, Putnam County.

Road No. 81.—Beginning at Chiefland, and extending to Dunnellon, via Otter Creek, Gulf Hammock and Lebanon and Tidewater in the most direct and practicable route.

Road No. 82.—Extending from a point about one mile north of Lake City on State Road No. 2 running through Columbia County to the Georgia Line.

Said road to follow as near as practical the present highway by way of Milton's store and Benton to Georgia Line.

Road No. 83.—Extending from Trenton to Lake City via at or near Williford, Knight Bridge, Fort White and Columbia City.

Road No. 84.—Extending from Marianna, on west side of Chipola River, by way of Carr and Clarksville, to where the same intersects State Road No. 6 at Chipola Park, in Calhoun County. That the route to be followed by the said Road No. 84 shall be as near as practicable the same route of the present Marianna and Wewahitchka Road to where the same intersects State Road No. 6.

Road No. 85.—Extending from Stuart to Indian-town, and thence to Okeechobee, said road to be known as the "Warfield Highway."

Road No. 86.—That the paved public highway from Arcadia, via Fort Ogden, DeSoto County, Florida, to Punta Gorda, Charlotte County, Florida, be and the same is hereby declared to be a State Highway, and is hereby designated, "The DeSoto Trail."

Road No. 87.—Beginning with the main highway leading south of Atmore, Alabama, and continuing in a southerly and southeasterly direction to Pensacola-Flomaton Highway at some point between Pine Barren Creek and Cottage Hill, said point to be determined by the State Road Department, all of said road in Escambia County.

Road No. 88.—Commencing on the State Line dividing the State of Alabama and the State of Florida, due south of Stephen's Ferry on Pea River, in the State of Alabama, at the end of State Highway in the State of Alabama, crossing said river at said Ferry, thence in a southeasterly direction, the nearest and most practicable route to an intersection of the Section line dividing Sections 4 and 5, 8 and 9, 16 and 17, 20 and 21, 28 and 29, 32 and 33, Town-

ship 5, North Range 17 West; and Sections 4 and 5, 8 and 9, 16 and 17, 20 and 21, 28 and 29, 32 and 33, Township 4, North Range 17 West; and Sections 4 and 5, 8 and 9, 16 and 17, Township 3, North Range 17 West; point of intersection of said Highway with said described Section line or lines, to be determined by the State Road Department, which from said determined point on said Section line, or lines, thence south along said described Section line, due south as nearly as practicable to the Town of Ponce de Leon, thence south to the County line dividing Holmes County and Walton County, thence in a southerly direction to the Lower Bridge on Bruce Creek, thence in a southerly direction to State Road No. 10, at or near Bruce, following the present public road as nearly as practicable; which road shall be located by the State Road Department as other State roads are located.

Road No. 89.—Extending from State Road No. 44, as now designated and established at the point where said State Road No. 44 crosses the St. Johns River, running thence due westerly as near as practicable to a point on State Road No. 4.

Road No. 90.—Beginning at a point on State Road No. 1, in Jackson County, not more than one-half mile east of new bridge over Chipola River, and extending to Greenwood and to within one-fourth mile of Bascom and to Dudley and to Neal's Landing on the Chattahoochee River in the most direct and practical route.

Road No. 91.—Extending from Ocala to Lake Weir, connecting with State Road No. 2, via Candler and Ocklawaha.

Road No. 92.—Connecting with State Road No. 1, at Live Oak in Suwannee County, thence extending west to Dowling Park, on Suwannee River, thence from Suwannee River south to intersect with State Road No. 5-A, in Lafayette County.

Road No. 93.—Extending from Pensacola along Gulf Beach Highway, in Escambia County, to the public road upon and into Inerarity Point, and thence along said Inerarity Point road to the shore line of Perdido Bay at the proposed bridge site of the bridge over said Perdido Bay.

Road No. 94.—Extending from State Road No. 1 at Lake Jackson in a northerly direction, crossing the Ocklocknee River over the Whidden Bridge and extending through the town of Concord to the Georgia Line.

Road No. 95.—Beginning at a point on State Road No. 47, where said road crosses the Township line dividing Townships Seven and Eight, run thence due west on said Township line to the Gulf of Mexico. Said road shall be known as "St. Augustine State Road No. 95."

Road No. 96.—Beginning at a point on State Road No. 43, at or near the head of the Wacissa River, thence through Thomas City and Waukeenah to a point on State Road No. 11 at or near the intersection of the present Pinhook Road with said State Road No. 11.

Road No. 97.—Beginning at Road No. 1 at Cypress and running in a southerly direction to Alliance and to Altha to connect with Road No. 6.

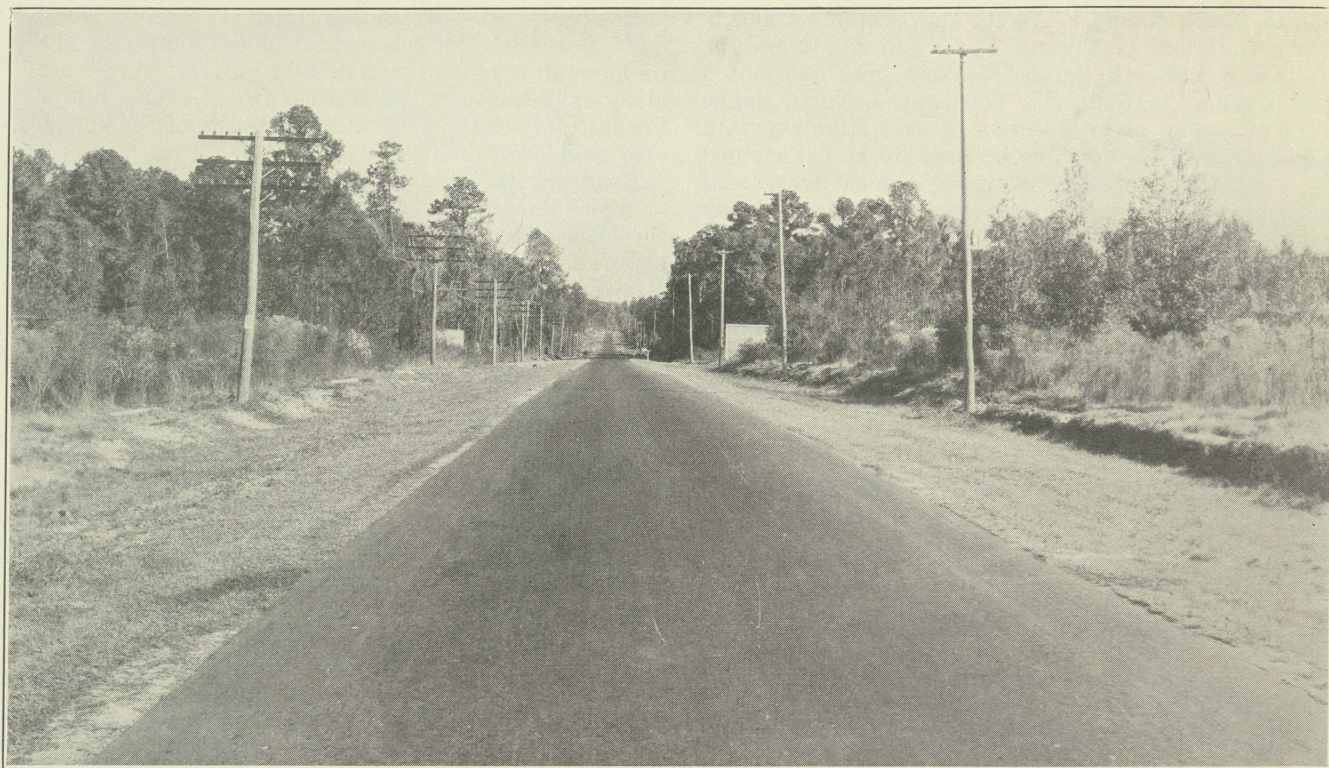
Road No. 98.—Beginning at Cottdendale on Road No. 20 and running from there to Graceville.

Road No. 99.—Leading from Worthington Springs, in Union County, in a southeasterly direction through LaCrosse, to a point on State Road No. 2 within Alachua County, about one mile northwest of Paradise, Florida, which point is located in Section 18, Township 9, south of Range 20 East.

Road No. 100.—Extending from State Road No. 21 at or near Crow's Bluff on the west side of the St. Johns River and extending westward via Altoona, intersecting State Road No. 38.



Road 5. Project 613. Sarasota County



Project 545. Road 5. Hernando County. Sheet Asphalt.

Road No. 101.—Extending from the Town of Wakulla to the Town of St. Marks, in Wakulla County.

Road No. 102.—Leading from the intersection of State Roads Forty-eight (48) and Thirteen (13), in Starke, Bradford County, Florida, to the Stockade at the State Farm, be, and the same is hereby declared and designated a State Highway, same to be known as the State Farm Highway.

Road No. 103.—Leading from a point on Road No. 5 at or near Williston, in Levy County, through Old Wacahoota, Micanopy, Rochell, Windsor to State Road No. 36 at Campville in Alachua County, thence over State Road No. 36 to Waldo, thence to Montecocha, thence to LaCrosse, thence to Alachua, thence west to Belle, in Gilchrist County, thence west to Wannee, in Gilchrist County, Florida.

Road No. 104.—Beginning at a point on the Pensacola-Flomaton Highway near the Molino cross roads, in Escambia County, Florida, thence to the City of Molino, in Escambia County, thence in a southeasterly direction to Milton, in Santa Rosa County and there connect with State Road No. 1.

Road No. 105.—Extending from the Town of Baker, in Okaloosa County, to Galliver on Road No. 1, thence from Galliver to Holt, thence from Holt to intersection of State Road No. 10 at or near Camp Walton via Log Lake Bridge, in the most practicable route.

Road No. 106.—Begin on State Road No. 5-A, about nine miles northwest of Mayo, Lafayette County, at or near where what is known as Madison-Mayo public road intersects said Road No. 5-A, thence run northerly to or near where said Madison-Mayo road intersects the Madison-Lafayette County boundary line, thence run to Madison by the most feasible and practicable route, thence by way of Hanson and Pinetta to the Georgia State Line where the Madison-Valdosta public road intersects the Georgia-Florida State Line in Madison County near Horn's Bridge.

Road No. 107.—Extending from a point on State

Road No. 1, about ten miles east of Tallahassee to Chaires, in the County of Leon and thence to Capitola, in said county, following as near as practical from Chaires to Capitola the present roadway and extending from Capitola, in the County of Leon, down through what is known as the El Destino Avenue of Oaks, in Jefferson County, to a point on Road No. 19 in Jefferson County, thence by way of Wacissa to the Taylor County line at or near Walker Springs, thence direct through Taylor County by way of Hampton Springs to Perry, thence south to a point on the Gulf of Mexico at or near the beach known as Adams Beach.

Road No. 108.—Extending from Poinciana, Monroe County, in a northeasterly direction to the Tamiami Trail.

Road No. 109.—Extending from Stuart to Indian-town and thence to Port Myacca, and to be known as "Gaines Highway."

Road No. 110.—Beginning about two miles south of Tallahassee on Road No. 10, at or near that branch of the Seaboard Air Line Railway between Tallahassee and St. Marks, running thence via Ivan to Crawfordville, running thence along and as a part of State Road No. 10 to Medart in Wakulla County, and from Medart running thence in a southerly direction to Panacea Springs on the Gulf Coast in said County of Wakulla.

Road No. 111.—Extending from Stuart to Palm City and thence to Okeechobee, said road shall be known as the "Martin Highway."

Road No. 112.—Extending from Branford to Lake City.

Road No. 113.—Extending from State Road No. 13, about three miles south of Starke, to Gainesville, via Graham, Brooker and LaCrosse.

Road No. 114.—Extending from the Town of Lawtey, in Bradford County, in a western direction to the State Farm Road.

Road No. 115.—From a point on State Road No. 10, at or near Camp Walton, Florida, running in an



Road 5. Project 663. Citrus County

easterly direction across the mouth of the Choctawhatchee Peninsular, passing not more than two and one-quarter ($2\frac{1}{4}$) miles south of the town of Santa Rosa, and not more than one and one-quarter ($1\frac{1}{4}$) miles south of the town of Point Washington, Florida, thence in an easterly direction, joining with State Road No. 10 at some point between Panama City, Florida, and Choctawhatchee River.

Road No. 116.—Beginning on State Road No. 2 just west of Alapaha River and running in a westerly direction via Blue Springs and connecting with State Road No. 1 just out of Madison, and to be known as “Blue Springs Highway.”

Road No. 117.—Beginning at Indiantown and extending to West Palm Beach in the most direct and practicable route, substantially along the route of the Seaboard Air Line Railway.

Road No. 118.—Extending from Astatula, on State Road No. 55, through Howey-in-the-Hills to Groveland, Lake County.

Road No. 119.—Extending from a point on State Road No. 22, two and a half miles west of Indian River City, northeasterly to the city of Titusville, thence to the Atlantic Ocean by the most direct route.

Road No. 120.—Connecting with the Suwannee River Scenic Highway at Branford, thence northeast via Hickory Sink to Wellborn, connecting with State Road No. 1 in Suwannee County, thence north through Suwannee and Columbia Counties to White Springs in Hamilton County, connecting with State Road No. 2.

Road No. 121.—Extending from a point on State Road No. 48, near north shore of Lake Kingsley, in Clay County, thence in a northwesterly direction to the town of Lawtey, in Bradford County, thence in a westerly direction to the Stockade of the State

Farm in Union County, thence in a westerly direction to a point on State Road No. 49 at or near the town of Raiford, in Union County.

Road No. 122.—Connecting with State Road No. 1, in Live Oak, running northeast via Pine Grove, in Suwannee County, intersecting with State Road No. 120 at a point near White Springs, in Hamilton County.

Road No. 123.—Extending from Campbellton, in Jackson County, to Graceville, in Jackson County.

Road No. 124. Road extending from the City of Lakeland, Polk County, to the City of Bartow, Polk County via town of Highland City.

Road No. 125.—Extending from the intersection of the Lillian Road with Nunez Ferry Road at West Pensacola and thence in a westerly and southwesterly direction to the Lillian Bridge over Perdido Bay, via Millview.

Road No. 126.—Beginning at Neal's Landing, Florida, thence in a southerly direction to Sneads, Florida, and from thence to Shady Grove, Florida.

Road No. 127.—Beginning at State Road No. 10, at Sopchoppy, thence via Greenough, Sanborn and Smith Creek Postoffice, in Wakulla County, to the intersection with State Road No. 66, at Ward, in Leon County.

Road No. 128.—Extending from Wakulla Beach to the intersection of State Road No. 10, at or near the upper bridge across the Wakulla River.

Road No. 129.—Beginning at St. Marks at the southern terminus of the Seaboard Air Line Railway, thence via Crawfordville to Arran.

Road No. 130.—Beginning at Wacissa, thence via Fanlew, both in Jefferson County, to the intersection with Gulf Coastal Highway at Newport, in Wakulla County.

Road No. 131.—Leading from Hampton, in Brad-



Road 5. Project 544. Pasco County. Lime Rock Base, Surface Treated

ford County, in a southerly direction on the hard-surfaced road leading from Waldo, in Alachua County, to Lake Santa Fe, at a point where the road to Orange Heights leads off at practically a right-angle curve.

Road No. 132.—Extending from Monticello along the route of the “Over the Lake” Road to the Leon County Line, via Herring’s Store, and also to intersect with the Metcalfe Road at the Georgia Line.

Road No. 133.—Extending from Monticello along route of the old Monticello-Aucilla Road to State Road No. 1; and also along the route of the Ashville Road to Ashville, and to intersect with State Road No. 35.

Road No. 134.—Beginning at Bunnell, in Flagler County, and running in a southwesterly direction along the present highway known as the Moody Boulevard to, or near, what is known as the Cody Store, thence turning in a southerly direction and continuing to a point on the line dividing the counties of Flagler and Volusia to intercept with what is known as the Perkins Road, and thence continuing along the said Perkins Road to DeLand.

Road No. 135.—Extending from Telogia to Sumatra, in Liberty County, to run parallel to the Apalachicola Northern Railroad.

Road No. 136.—Extending from Jackson Bluff to Carrabelle and Quincy Road south, continue to due east of the town of Telogia, then straight to Telogia Station.

Road No. 137.—Beginning at White Springs and running in a northerly direction along the Suwannee River north to the Georgia Line in the most direct and practical route, be, and the same is hereby known as the “Woodpecker Route.”

Road No. 138.—Known as the Lem Turner Road, beginning at the corporate limits of the city of Jack-

sonville, in Duval County, and running thence in a general direction of the present Lem Turner Road to a connection with State Road No. 4 at Callahan, in Nassau County.

Road No. 139.—Known as the Old Orange Park Road, beginning at the corporate limits of the city of Jacksonville, in Duval County, and running thence in the general direction of the present right-of-way of the Old Orange Park Road to a connection with State Road No. 3, Orange Park, in Clay County.

Road No. 140.—Road to be known as Atlantic Beach Boulevard, which shall extend from the City of St. Augustine, in the County of St. Johns, to the City of Miami, the County of Dade, running in a southerly direction across and through the Counties of St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie, Martin, Palm Beach, Broward and Dade.

Road No. 141.—Commencing at a point on Road No. 90, between Greenwood and Bascom, extending to Malone and to Alabama State Line, in the most direct and practical route.

Mexico, under laws passed by the Mexican Congress in 1925, is making rapid progress on a Federal system of highways comprising 1,337 miles of surfaced roads. A gasoline tax of 5.7c per gallon provides a fund of approximately \$6,000,000 annually for construction work.

Rural Progress.

“Have you made any improvements around the farm?” he was asked.

“Yes, sir,” answered Farmer Hawbuck. “We’ve rechristened the old barn. We call it a garage now and make the summer boarders pay rent for it.”—Boston Transcript.

Highway Policies

By Thos. H. McDonald, Chief, Bureau of Public Roads, Washington, D. C.

THE highway situation is constantly changing in detail and in its broad trends. As the opportunity has come each year to me to address this conference of the American Association of State Highway Officials, it has been approached with the thought of placing before the highway executives of the nation a definite, forward looking, but not radical expression, upon some of the matters which appear at the moment to be of major importance both for the present and for the future, which, notwithstanding changing conditions, will be so materially influenced by what we do now. Even more it has been approached with the hope of correctly interpreting the Bureau of Public Roads to you that the present cordial relationships may be guarded against misunderstanding. Perhaps this is too meagerly phrased to indicate the full significance to highway progress of harmonious and concentrated effort by the State and Federal highway forces. Highways are characterized by, and inseparable from, their community interests. Whether considered from the State, national, international or local viewpoint, whether from that of the road builder or the road user, the common interests must first be served, since, together, they are the most important. To me, this "community of interests" aspect of highways contains a constantly growing appeal as not only their direct but, even more, their indirect influences become more and more apparent. Through these influences we enjoy the real opportunity to lift the dead level of the day's work toward the higher objective of progress in Government and thus contribute,

each one as he is able, to the common good. This general thought may be more clearly expressed by reference to more specific matters.

The Proposed 1930 International Conference

This year there has been a notable increase of officials and students from foreign countries to study and to examine critically our highways and highway policies. They are not the first to come for like purposes from other lands. Prior years have brought individuals, but not until the last year or two have we been able to visualize by their number, the far-distant journeyings and their intimate descriptions of home conditions, that this problem of highways and highway transport, with which we are confronted, is an acute world problem and that the United States has become the proponent of methods and policies of new concept and, more important, a leader in their effective use. Within the twelve-month period governmental officials, engineers, business men and students from China, Japan, Australia, India, Mexico, Norway, Sweden, Chile, Argentine, Brazil, Colombia, Ecuador, Venezuela, Bolivia and Peru have spent from a few days to an extended period inspecting and gathering data for the direct purpose of transplanting to their own countries such of our highway experiences as they find applicable. The wide variations to be found here in climate, topography, traffic, population density, soils and materials offer somewhere conditions closely parallel and problems quite typical of their own countries. Some have



Road 5. Near Inverness, in Citrus County. Surface Treated



Road 5. Project 545. Hernando County. Overhead Crossing Including Approach

been chiefly interested in technical detail. Others have sought governmental and administrative policies. Whether the one or the other, there has been unanimity of agreement in their expressed appreciation of the courtesies and information furnished by the State and Federal highway officials.

This outside viewpoint of what the United States is doing with her highways and highway transport found a most encouraging and complimentary expression in June of this year when the Executive Committee of the International Association of Road Congresses voted to hold, in 1930, the next international assembly in this country if an official invitation is forthcoming. Such an invitation can only be issued by the United States Congress. This opportunity to bring together in the United States the foremost highway officials and best qualified engineers of all the nations of the world will not come again for many years. The far-reaching national and international influences of, and through, such an event are not easily exaggerated and must not be lost to us. This Association of State Highway Officials would be a ranking host to these world representative guests.

This country does have much that may be of the greatest value to other nations in the development of highway transport with its many, as yet, new problems. A very wrong impression exists that in the United States highways are not advanced to standards of service commensurate with those of other countries. Statistics are not comparable. Perhaps the real picture may be visioned, but not well, by sketching in a detail or two.

The largest concentration of population abroad is in the London metropolitan area. When the right of way was secured about 1920 for the new radial trunk roads, the cost of good agricultural land within six or seven miles of the very heart of the city was less than the acre price of farm land in the Missis-

sippi Valley well away from even a large town. Compare this fact with the per acre price of suburban acreage in any metropolitan district in this country to realize only a little of the more extended use here of highway transport in just this one field. Or read what Colonel Bressy, Chief Engineer of the Ministry of Transport, has written, 1923, of highway conditions as they have existed and to a large extent still exist in the London district in which there is such very heavy highway traffic.

In some other country then? Ing. Puricelli, of Milan, built the Autostrade, the highway exclusively for motor traffic, from Milan to the Italian lakes, in all a length of about fifty miles. The design incorporates the best of modern standards. Its actual accomplishment is an even greater achievement. His authority and experience in this field are unquestioned. What is his testimony as to the adequacy of the roads of Italy—these highways whose forebears were the Roman roads of antiquity? He and his associates, in co-operation with the Ministry of Public Works and the Italian Touring Club, have undertaken to prepare a comprehensive scheme for the general overhaul of the first-class roads of the country. His preliminary estimates, based on as yet incomplete data, indicate a needed expenditure of, roughly, \$14,000,000 for about 13,000 miles to bring these main roads to a condition adequate for the traffic. In the area of the heaviest traffic, his estimate of unit costs ranges from about \$12,800 to \$23,000 per mile. The number of passenger cars and motorcycles registered in 1926 is 197,970. To the highway group these facts need no interpretation. They illuminate Italy's road problem as well as their condition.

Highway Policies Developed in the United States

Surely this nation does have much of valuable experience in highway matters to share with other coun-

tries, and we should. As a nation we have profited much from the experiences of the older nations. How much of our present cultural, social, religious, educational fabric has been woven from threads spun out of the experiences, sacrifices, and advancements of those who as individuals or as nations built painstakingly and slowly through the centuries the enduring and worth-while concepts we call civilization. Language, religion, architecture, art, music, literature, medicine, laws, where in the whole list can we find one in which we have in the past surpassed all others in the elements we believe to be enduring? But the United States has made her great contributions to civilization. In form of government? In the political field, yes. We believe and hope it is so. But the time element is to be considered. Other forms of government are older. Our nation is yet young. At least the point is debatable by those who demand more centuries of successful demonstration.

In what field, then? The only one which will be easily conceded is that of engineering achievement. Not engineering in fine detail. Other countries produce fine engineers, highly trained. The measure of the achievement is not that of the personal equation. Rather it is the engineering achievement of organization and mass production. Availability is made possible by the combination of cheap transportation, mechanical power and equipment, and great engineering vision of consumption. This is the great contribution the United States has made to civilization, measured by standards of living.

This general idea is both proved and illustrated by the services of transportation, of communication, and of sanitation. Each has large and intricate requirements of far-spread planning and operating organizations, of financial support, of research of constantly changing devices, and improved processes. Yet with

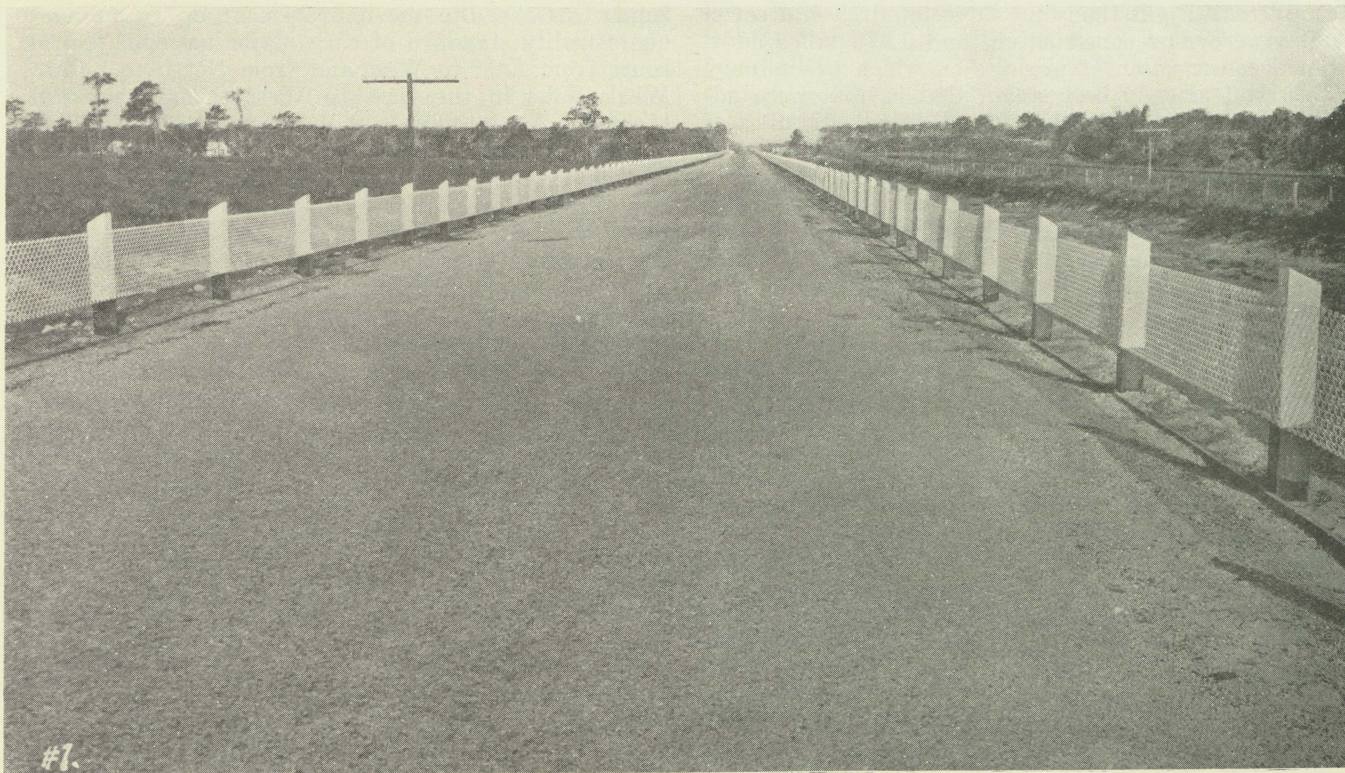
all these and many others, these typical services upon which depend in so large a degree the every-day living standards of our people are made available throughout the nation and for a relatively low cost to the individual. What is commonplace and possible of enjoyment to those with very moderate incomes here are frequently luxuries or impossible to secure elsewhere. So, by this reasoning, we reach some fundamental conceptions:

First, there is no nation today which has highways adequate to its present, much less its future, rapidly developing highway transport needs.

Second, that the same principles of engineering organization and quantity production which have been so successfully demonstrated in the United States must be applied universally to produce adequate mileages of serviceable highways at the lowest cost.

Third, that the most important progress has been made in processes and methods which have made possible increased production.

For example, consider the stage construction policy. In highway building the time element is important in the first stages of improvement, where, as in many States, there has necessarily been much relocation and realignment. Delays are inevitable with loss of time, and there has been frequent criticism of the progress made toward an adequate major highway system in those States which have shown a large percentage of first-stage construction only. Yet the real progress has probably been as great as in those States where less attention was given to the fundamentals of location, drainage structures, and grading. As funds are now becoming available in larger amounts in a number of these States, their progress in surfacing will be rapid. It is true that the service for the past several years has not been first-class by any



Road 5. Project 564-C. Charlotte County. Lime Rock Base, Surface Treated. 80-foot Steel Bridge across Allapachee River

means, but the policy of laying the foundation when funds for the completed improvement were not available has justified itself a thousand fold.

There are other outstanding examples of this principle of quality production at the lowest consistent cost. State highway maintenance, the use of power equipment for grading, the use of mechanical equipment throughout for building concrete roads, the fine crushed rock surfaces of the West, the bituminous processing of these and the reclaiming of the old macadams of the East, are all of this order. Measured by the important standards of the time gained in making the roads available, their cost and the quality of their service, it is evident that these newer principles of administration define the only possible approach to a meeting of the demand for highway service not only at home but abroad as well. So in the development of sound principles of engineering and financial administration this country has much to contribute and should place greater emphasis on their future development, making engineering detail and technique the servant and not the master of these principles. If it becomes the good fortune of this nation to have as its guests in 1930 the leading engineers and officials of all the other countries of the world, we, speaking particularly for the State and Federal administrative officials, must be in a position to justify the principles of administration upon which we are relying, by the results produced. A sacrifice of sound technique or quality of product is not a necessary companion of quantity production. This it will be possible to demonstrate through a critical examination of the results and a generous co-operation to remedy defects.

Progress in Federal Aid Highway Construction

For the fiscal year ending June 30 under the Federal-aid program, 9,683 miles of projects were completed. Eight thousand three hundred and seven miles were new construction, and 1,376 miles additional construction of projects on which preliminary work had already been done; that is, that were additional stages of construction. While 2,537 miles of graded and drained roads were built as original construction during the year, the mileage in this stage increased by only 1,145 miles. This was the result of the further improvement of previously graded roads as stage construction. This is a decided advance which indicates the turning toward the more adequate improvement.

Three thousand two hundred and ninety-nine miles of gravel were built, a decrease of 862 miles below the previous year, and 2,971 miles of pavements of bituminous and cement concrete, a decrease of 518 miles below the preceding year.

In these figures the evidence is clear that the Federal highway funds accumulated during the war and immediately following have been largely used and we are approaching the annual production that will be possible with the current authorization.

The total of Federal-aid projects completed, under construction, or approved for construction as of July 1 was 76,708 miles, divided as follows:

	Miles.
1. Stage construction, graded, and drained..	15,500
2. Sand, clay, and gravel.....	34,474
3. Waterbound macadam	1,431
4. Bituminous macadam	4,307
5. Cement concrete	18,009

6. Brick	832
7. Bituminous concrete and asphalt.....	1,923
8. Bridges	232

Stage Construction

There has been in the minds of many, chiefly those not directly connected with highway improvement, the question as to the use of Federal funds for the lower types of construction, particularly the first stage of graded and drained earth roads. This year we have the answer to these critics. A material advance has been made in the application of the surfacing or second stage of improvement to a considerable mileage, and this will continue at an accelerated rate. The policy is one of the most valuable tenets of administration that can be recommended to other countries in the early stages of their highway development.

As a matter of fact, to a large extent all highway construction must be stage construction, and there can be no just criticism of whatever is undertaken if it be undertaken intelligently with a well-defined conception of the future development and if the execution of the idea is efficient.

National Highways and Metropolitan Area Roads

As little as five years ago it was thought that the national highway problem lay in the necessity for the building of transcontinental routes. Our knowledge of traffic flow and highway utilization has changed materially in that time, and today transcontinental traffic is far better provided for than is the weekly peak traffic, particularly in metropolitan areas. This is not boasting about transcontinental routes. A great deal remains to be done, and now that we have agreed upon a system of interstate routes we need to demonstrate that the principle of co-operation between the States and the nation when assisted by Federal-aid funds can expedite the improvement up to an adequate utility standard of each major national traffic route from East to West and from North to South. Weak links in the East to West transcontinental highways lie largely between the 90th and 117th meridians or, roughly, between the Mississippi River and the eastern boundaries of California, Oregon, and Washington. North to South there is a potential traffic between the Great Lakes and the Gulf coast which is now held back by weak links on the United States system, largely south of the Ohio River.

Transcontinental traffic has been thought about from the earliest days in terms of East to West traffic. There is a potential North to South traffic that will develop quickly into now unguessed dimensions following the completion of adequate routes. Why not agree between ourselves upon a policy of using at least 50 per cent of the Federal-aid allotments in the closing up of the gaps in these main thoroughfares, and realize within the next two or three years a consummation of the representations that have been continually made by both the Bureau of Public Roads and the States that it is possible under the present plan to secure an adequate national system of highways more quickly than in any other way?

As highway officials we do not want to confess at the close of another year that we do not have as yet a completely improved highway route across the country. By a recognition on the part of only a few States that they do have an obligation to their sister

States and to the national plan of highways, such confession will not be necessary. Political differences ought to be adjusted in a few States so the highway situation would not be in continual jeopardy from improper administration. How each State administers its own funds and internal affairs is very much its own affair, but how any State administers the Federal highway funds is quite a different matter. The Bureau is now prepared, failing to obtain co-operation for the completion of these important thoroughfares, to insist upon a recognition of the requirements of the law which provides for expediting the completion of these routes. The Attorney General of the United States has ruled with special reference to the reconstruction of the interstate bridge at Memphis that in order to expedite the completion of interstate routes the Secretary of Agriculture has full authority to withhold his approval of other projects.

In connection with the interpretation and enforcement of the Federal highway legislation, the thought is continually before the Bureau of the community of interests between the States which are tied together by their highways. Thus, in insisting upon the completion of gaps the Bureau is endeavoring to bring about in full measure a compliance with the community interests. It requires no boldness to assert that a twisted perspective of States' rights exists. The rights in this instance are all with the States which have met the needs of the public service and all against the tardy and reluctant States. There can be no rights which are wrongs to the majority of the whole community.

The greatest problem in the highway field is the number and character of the roads required in the metropolitan areas. Both the States and the Federal Bureau are less able to contribute in a major way to the solution of this problem than elsewhere. Here the routes of the State system, or the Federal highway system, constitute the main traffic arteries, but within a 50-mile radius there are many other routes which may for local traffic be almost of equal importance.

What may be called the city gateway problem falls upon the shoulders partly of the State, but largely upon the counties and smaller subdivisions. It is a problem largely resulting from multiple and interfering jurisdictions. Highway traffic in quantity has very similar characteristics to the flow of liquids. It has been possible in the laboratory to determine the laws governing the flow of liquids. The great decrease in the flow of liquids caused by obstructions or abrupt change of direction is known and determinable by mathematical computation. We will determine these rules for highway traffic, even though it is a long and tedious process. But the technical knowledge of what to do is far in advance of the probability of its being done, due to the multiplicity of conflicting and overlapping jurisdictions. In Cook County, in the Chicago metropolitan area, the transport survey quickly developed the fact that within a radius of 30 miles there were 89 civil jurisdictions controlling sections of the traffic routes and, with the exception of the State and county, these different units were largely working independently or not at all. As the survey proceeded it became apparent that the greatest obstruction to traffic existed in this multiplication of overlapping jurisdictions.

There are two methods that may be used for handling the highway problem in these metropolitan areas: First, the plan of securing legislation which

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sets up a board with super authority over all established authorities; and, second, the plan of securing voluntary co-operation between the existing authorities. It is not possible to discuss the relative merits and demerits of these two methods, since up to the present time neither plan has been in operation long enough to determine whether it will succeed or fail. It is certain, however, that the first plan will always meet with hostility, which may become so vigorous as to delay action for a long period. The second plan contains the valuable element of being at once available and, at worst, it can only partially fail to succeed.

It is my judgment that the plan of co-operation can be made to work. On the request of the Board of County Commissioners of Cuyahoga County, Ohio, the Bureau has undertaken, in co-operation with that board, a survey in the metropolitan area of Cleveland to include a radius of upwards of 50 miles—a similar study to that in Cook County. However, in this instance, before agreeing to participate in the survey which has for its purpose the formation of a plan of highways for the whole metropolitan district, all of the communities interested were invited to attend a conference at which the purposes were explained and a request made that the various jurisdictions join to formulate a plan and to carry into effect their parts of the plan when it was made. So before the survey started all of the jurisdictions, whether city, county, or township, had signed a definite agreement to make the plan to be agreed upon effective. Not much faith is necessary to believe that this document will become a historical one, because the agreement on the part of the various governing bodies within the metropolitan areas—

first, to plan; and, second, to build according to plan—will probably become the most effective method of handling the highway problem in the metropolitan areas. It may mean, of course, the transfer of jurisdiction or the broadening or relinquishing of jurisdiction, in order to accomplish the purpose. When it comes to the financing, undoubtedly relief must come to the smaller units from the larger ones. The plan of finance is equally important with the physical plan. The big point is that the officials possessing the legal authority to act have agreed to work together. In similar movements the State and, perhaps, to a certain extent, the Federal Bureau of Roads can be of considerable help, and this is a part of the responsibility which they must undertake.

Balancing Highway Budgets With Highway Needs

It has become more and more apparent, particularly as the discussion of annual budgets has become common, that there are two kinds of budgeting; the budget that is prepared with reference to the expected income, and the budget that is prepared with reference to the physical condition and necessities of the highways. They might be termed the fiscal budget and the physical budget. The first type of budget is open to a great deal of mismanagement no matter how correct the fiscal information. The second type of budget is the only plan that eventually will work for economy. It is apparent that a great many State highway departments do not have the information in sufficiently accurate form, relative to the physical condition and necessities of the highways, to prepare the kind of a budget that will eventually lead to a system of roads uniform with the necessities of traffic. This lack of information is evident in budgets improperly balanced between reconstruction and new construction on extensions. It will always be a temptation to add to the mileage of State routes. During the year 1926, 13,000 miles of road were added to the State systems, and it is this tendency that definitely pointed out to the Bureau the necessity for requesting that the first stage construction projects be lifted to a higher degree of improvement at a rate to wipe out the roads of this class within a very few years. The policy of approving stage construction projects will be limited in the future to a definite period, and more for the purpose of handling the first stage of construction efficiently than for the purpose of deferring the greater expenditure necessary to provide a utility surface.

Motor Truck and Bus Regulation

One of the most peculiar and unintelligent reactions to a progressive policy of weight regulation was manifest in the consideration accorded legislation proposed last year to permit the use of six-wheel trucks. Only two States adopted legislation providing for such use, and it was definitely turned down in other States, in one or two cases on the recommendation of the highway officials. All of the available information indicates that the way to approach the handling of the heavier loads on the highways is by multiplying the wheels and limiting the concentration of load per wheel. This principle will undoubtedly be accepted eventually, but it is a principle that should find vigorous support from the highway officials where so far it has failed to receive justifiable support. The question of what wheel concentration should be permitted is, of course, debatable, but there is no room for questioning the principle of increase

of wheels and decrease of wheel concentration. By this is meant not so much the matter of wheel concentration legally permitted as the actual concentration which exists. Whether national legislation to regulate the motor bus and truck will be seriously urged before the next session of Congress is not now indicated. Both of these services have very quickly found their respective fields of usefulness because they have been left largely free from artificial restriction. This has resulted in a more complete operation of economic regulation which is the to-be-desired status. It now seems well proven that the physical regulation is certainly a function of the States which must maintain the highways, and the intrastate service, to the extent legislative regulation is necessary to protect the public, is likewise a State function. This leaves only the interstate service of common carriers for possible national legislation. But this interstate service is in fact so small a part of the whole and so intimately connected with intrastate operation that it seems most desirable to permit this also to be administered by the States, with uniformity assured. The constitutional method to accomplish this is believed to be available.

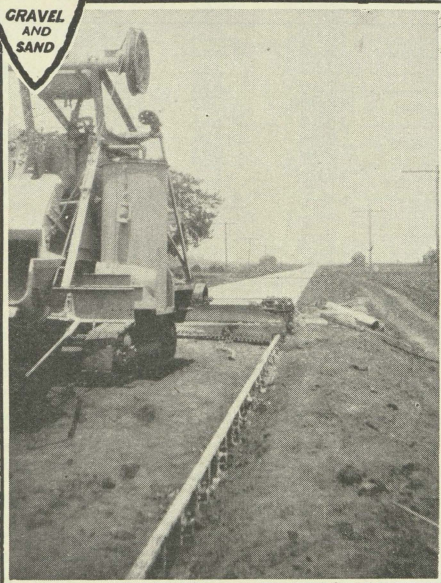
Highway Safety

The problem of highway safety is one that can only be met by co-operation. There is much overworking of the word, and a greater disregard of its meaning. The lack of correlation between the traffic officers and those responsible for street and highway improvements, particularly within the city areas, is distressing in the extent to which it exists. Also the growth in the installation of automatic stop lights is a tribute to salesmanship rather than to engineering intelligence. There are limited areas in cities where traffic is equal and constant, where there is a large amount of pedestrian as well as vehicular traffic, and where the stop and go control is necessary and, so far, the only developed means of meeting the situation. It is certain that a large amount of fundamental research and investigation, and probably trial plans, must be undertaken in order to prevent the loss of perhaps the most valuable element which the motor vehicle has brought; that is, the saving of time to the individual.

Engineering Personnel

The demand upon the highway field for engineers who have had training and experience continues to point to the necessity for the special training of young engineers who have attended the technical schools. It is also evident that the United States is to become the mecca of a great many foreign students seeking experience and knowledge in this field. Recent communications in which the possibility of the use of a few foreign students was brought to the attention of the State highway departments have elicited a wonderful response. It would afford me great pleasure to read before this Association the replies received from the State highway departments upon this subject. It is my opinion, based on observation in many foreign lands, that through the interchange of opinions and experience and the personal contacts between those connected with the highways in this country and those in other lands that a sound community of interest can be built that will help interpret the United States to others and help us to understand them. A few days ago one of the foreign

(Turn to page 21.)



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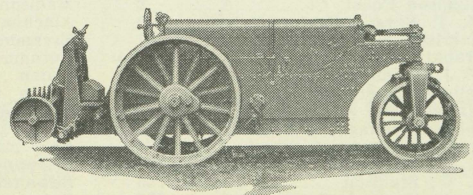
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Jacksonville

Contracts Awarded by State Road Department January 1st, 1927, to November 21st, 1927

Contractor—	Project No.	County—	Length Miles	Length Feet	Contract + 10 %	Type
Noonan-Lawrence	54	Leon	13.00		385,288.87	Concrete.
Higgison Const. Co.	59	Leon-Jefferson	9.10		266,053.37	Concrete.
Duval Engr. & Contr. Co.	54-A & 58	Leon-Jefferson	12.53		264,524.48	R. B. S. T.
Manley Construction Co.	53-A	Lake	7.10		249,034.28	Asph. Conc.
W. J. Bryson Paving Co.	52	Escambia	10.089		241,904.49	C. G. & G.
Boone & Wester	677-C	Levy	10.16		224,345.97	C. G. & G.
Thompson & Moseley, Inc.	677-D	Levy	7.58		67,337.34	C. G. & G.
Lake Worth Const. Co.	683-C	Palm Beach	8.27		44,290.95	C. G. & G.
B. Booth & Co.	687-B	Lake	15.22		89,496.93	C. G. & G.
C. T. Dawkins	50-A	Putnam		120	22,243.32	Conc. Overh'd.
Okeechobee Const. Co.	655-667	Highlands		815	50,006.55	Timber.
C. H. Turner Co.	697	Escambia		488	22,911.53	Timber.
Duval Engr. & Contr. Co.	571	Madison	14.56		47,190.03	S. T.
Langston Const. Co.	660	Clay	10.52		33,538.07	S. T.
H. E. Wolfe	48	St. Johns	15.39		370,252.82	R. B.
Nelson Brothers	694	Martin	8.48		275,185.30	Concrete.
Johnson, Drake & Piper	693	St. Lucie	8.93		312,662.92	Concrete.
Concrete Steel Bridge Co.	665	Clay		1400	208,167.96	Concrete.
Concrete Steel Bridge Co.	664	Clay		1600	236,366.90	Concrete.
Royce Kershaw, Inc.	640-B	Martin		131	32,201.40	Concrete.
F. M. Stuart & Co.	40-B	Brevard		108	40,149.91	Concrete.
Langston Const. Co.	641	Palm Beach	9.67		188,279.21	R. B.
Samuel Vadner	695	Lake	10.50		63,734.69	C. G. & G.
Tampa Sand & Shell Co.	695	Lake			63,368.28	Hyd. Fill.
R. C. Huffman Const. Co.	669-D	Dade	12.30		382,038.36	C. G. & G.
Dean, Yarborough & Ebersbach	685	Franklin	17.43		159,980.86	C. G. & G.
Wm. P. McDonald Const. Co.	648	Hardee	7.14		24,075.97	S. T.
L. M. Gray	676-A-B	Levy	24.35		80,637.57	S. T.
West Construction Co.	614	Sarasota	17.34		483,586.35	Bit. Conc.
Manley Construction Co.	687-A	Lake	15.00		436,551.76	Sheet Asphf.
M. C. Winterburn, Inc.	543	Seminole	14.20		405,296.30	Bit. Mac.
Wm. P. McDonald Const. Co.	648	Hardee	6.36		123,804.83	R. B. S. T.
Duval Engr. & Contr. Co.	659	Clay	2.80		49,310.97	R. B. S. T.
C. A. Steed & Sons Co.	668	Brevard	13.45		273,640.32	R. B. S. T.
Stidham & Hughes	564-C	Charlotte	3.93		81,173.55	R. B. S. T.
H. L. Clark & Sons Co., Inc.	676-C	Levy	15.01		227,110.22	R. B. S. T.
F. X. Bradley & Co.	573-D	Orange	16.81		95,642.25	C. G. & G.
C. A. Henderson	713	Columbia	10.00		85,284.71	C. G. & G.
James Betteridge	41-B	Dade		88	42,387.84	Concrete.
Peterson & Earnhart	698	Leon		400	34,773.06	Concrete.
Peterson & Earnhart	699	Jefferson		300	27,441.17	Concrete.
John J. Quinn, Inc.	641	Palm Beach	1.00		52,494.31	S. T.
Board Co. Commrs., Taylor Co.	745	Taylor	14.00		12,320.00	C. & G.
Finlayson & Morris	747	Jefferson	6.50		40,566.79	C. G. & G.
C. S. Maulsby	694	Martin			10,780.00	Protection.
Kibby Engineering Co.	663-679	Citrus-Hernando	15.00		19,145.28	Guard Rall.
Alexander, Ramsey & Kerr, Inc.	669	Dade	4.27		205,700.00	C. & G.
Langston Constr. Co.	522	Nassau	4.06		43,394.76	R. B. S. T.
W. J. Bryson Paving Co.	593	Manatee	0.66		12,058.22	Bit. Conc.
E. W. Parker	589	Lee		313	43,942.63	Concrete.
Murphy & Pryor	691	Indian River		285	60,594.05	Conc. Overhead.
Hayes & Kroeger	687-A	Lake		120	18,264.37	Conc. Overhead.
E. W. Parker	614	Sarasota P		165	50,330.50	Conc. Bridge.
E. W. Parker	614	Sarasota V		150	71,320.42	Conc. Bridge.
E. W. Parker	614	Sarasota S		130	53,530.89	Conc. Bridge.
E. W. Parker	614	Sarasota H		130	68,210.17	Conc. Bridge.
Cone Bros. Const. Co.	49	Flagler	13.81		252,196.06	R. B. S. T.
Fowler & Banko, Inc.	691	Indian River	5.52		165,364.35	Concrete.
Fowler & Banko, Inc.	692	St. Lucie	7.38		229,002.48	Concrete.
General Const. Co.	41-B	Dade		132	40,529.06	Conc. Bridge.
F. X. Bradley & Co.	716	Bradford	11.12		57,024.85	C. G. & G.
F. X. Bradley & Co.	717	Bradford	10.93		85,834.62	C. G. & G.
L. M. Gray	50-B	Putnam	9.77		158,822.09	R. B. S. T.
N. C. Cash	50-C	Putnam	10.03		178,026.92	R. B. S. T.
C. R. Scott	619	Alachua	9.28		134,370.72	R. B. S. T.
Higgison Const. Co.	6	Madison	5.45		47,471.46	C. G. & G.
W. J. Bryson Paving Co.	55	Alachua	16.77		142,280.00	C. G. & G.
Harrison & Estes	697	Escambia	.14		9,013.01	C. G. & G.
Franklin Const. Co.	706-A	Putnam	12.09		83,567.57	C. G. & G.
W. J. Bryson Paving Co.	714	Union	10.20		67,006.89	C. G. & G.
Sellers Const. Co.	715	Union	3.20		20,752.62	C. G. & G.
Little & Lee, Contractors	742	Alachua	7.65		39,762.96	C. G. & G.
Johnson, Drake & Piper	680	Bay		4000	829,392.71	Conc. & Steel.
Johnson, Drake & Piper	681	Bay		7530	1,119,966.46	Conc. & Steel.
F. W. Simpson	764	Suwannee	12.00		55,731.19	C. G. & G.
F. W. Simpson	765	Suwannee	7.00		30,428.89	C. G. & G.
Duval Engr. & Contr. Co.	677-A	Levy	6.96		88,648.38	R. B. S. T.
W. J. Bryson Paving Co.	53-B	Lake		570	96,431.98	Conc. Bridge.
C. G. Kershaw Contr. Co.	719	Suwannee	8.57		40,355.35	C. G. & G.
American Bascule Bridge Corp.	53-B	Lake			16,471.40	Bascule.
Nashville Bridge Co.	685-B	Franklin		120	16,183.75	Steel Span.
N. B. Burton	677-D	Levy	3.05		15,827.95	C. G. & G.
Carl Fay	668	Brevard			7,326.00	C. G. & G.
Peterson & Earnhart	698-B	Leon		110	4,689.08	Overhead Timber.
Barnes Construction Co.	518	Lafayette	17.75		122,259.23	C. G. & G.
L. B. McLeod Const. Co.	535	Lafayette	13.19		68,103.35	C. G. & G.
L. B. McLeod Const. Co.	624	Hamilton	6.23		36,848.61	C. G. & G.
Curry & Turner	706-B	Putnam	14.91		68,419.63	C. G. & G.
Hardee Fisher Co., Inc.	708	Jefferson	7.98		64,781.26	C. G. & G.
Hardee-Fisher Co., Inc.	720	Jefferson	9.64		62,038.84	C. G. & G.
R. J. Carroll	722	Jefferson	8.83		67,379.51	C. G. & G.
L. B. McLeod Const. Co.	723	Leon	11.76		91,031.05	C. G. & G.
A. E. Campbell	763	Suwannee	12.23		35,291.76	C. G. & G.
Peterson & Earnhart	6-B	Madison		297	58,579.56	Conc. Bridge.
Peterson & Earnhart	700-B	Jefferson		496	64,333.54	Conc. Bridge.
N. S. Golden	669XZ	Collier		600	8,801.65	Timber Bridge.
W. M. Hartin	593	Manatee			7,012.50	Remove Bridge.

CONTRACTS AWARDED BY STATE ROAD DEPARTMENT—(Continued)

January 1st, 1927, to November 21st, 1927

Contractor—	Project No.	County—	Length Miles	Length Feet	Contract + 10 %	Type
L. M. Gray	50-A	Putnam	6.18	.....	\$107,716.22	R. B. S. T.
H. E. Wolfe Const. Co.	669-X-Z	Collier	15.88	.....	220,281.24	R. B. S. T.
West Construction Co.	640-A	Martin	9.00	.....	245,980.24	Sheet Asph.
West Construction Co.	640-B	Martin	11.80	.....	338,710.85	Sheet Asph.
S. F. Snyder & Son	654	Broward	6.30	.....	160,037.98	Bit. Mac.
E. F. Powers Const. Co.	615	Sarasota	11.92	.....	118,804.33	C. G. & G.
Cox & Bryson Paving Co.	573-D	Orange .....	.....	173	30,833.50	Conc. O. H.
The Albinson Co.	661-B	Lake .....	.....	40	18,408.24	Conc. O. H.
Chas. F. McKensie & Co.	695-B	Lake .....	.....	509	36,939.21	Conc. O. H.
Kidd Construction Co.	706	Putnam .....	.....	675	33,826.98	Timbr. Bridge
Gillespie & North	717	Bradford .....	.....	110	5,139.64	Timber O. H.
Duval Engr. & Contr. Co.	659	Clay	2.53	.....	38,223.30	R. B. S. T.
American Bascule Bridge Corp.	695-B	Lake .....	.....	40	17,585.70	Bascule
Langston Const. Co.	695	Lake .....	.43	.....	6,141.57	R. B. S. T.
Totals			729.98	22,150	\$13,739,912.34	

HIGHWAY POLICIES

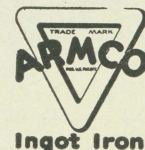
(Continued from page 18)

attaches of the Department of Commerce made the amazing statement in my office that, due to the conditions of transportation in Turkey, it was actually possible to lay down flour milled in the United States, from wheat grown in Minnesota and our Northwest, at Samsun on the Black Sea, 6,000 or 7,000 miles away, at a less cost than flour milled from wheat grown in the interior of Turkey, perhaps 250 miles away. Countries which have long gone without anything like adequate transportation because of their inability to finance railroad construction can find in motor transportation either the final solution of their transportation problem or a definite step toward the possible combination of highway and railway transport that will adequately serve their needs. The expression of the interest of the highway departments is one of the most convincing evidences that I have received of the broad-minded outlook and public

spirit of the men who are at the head of the highway work throughout the United States. There is a sincere feeling of appreciation throughout the various Federal agencies, such as the Department of State, the Department of Commerce, the Pan American Union, and the Department of Agriculture, for the courtesies, helpfulness, and attention that have been extended to those from other countries so generously by the State highway departments whenever they have had the opportunity. The fact that there will apparently be constant demands in the future, and undoubtedly growing demands of the same character, leads me to express the hope that when such requests are made they will be met in the same spirit as in the past. They are only made by this Bureau, and any other agency of the Government, in the belief that, whenever it is possible to give the opportunity to those from the outside to understand and see the United States and to obtain information of value, it is a real advantage to the United States.



Armco Corrugated Culverts at the Venice (Florida) Golf Course.

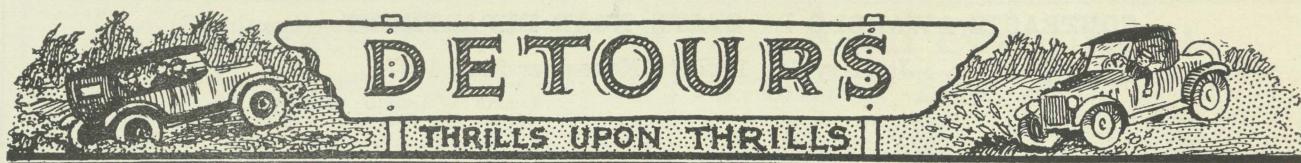
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One on Pa

"Pa, will you buy me a pair of boots if I prove to you that a dog has ten tails?"

"Yes."

"Well, to begin with, one dog has one more tail than no dog, hasn't he?"

"Yes."

"Well, no dog has nine tails; and if one dog has one more tail than no dog, then one dog must have ten tails."

He got the boots.—Georgia Highways.

The following was the verdict by an Iowa jury in a suit against a railroad company:

"If the train had run as it should have ran; if the bell had rung as it should have rang, if the whistle had blowed as it should have blew, both of which it did neither—the cow would not have been injured when she was killed."—Erith Observer.

Watch Your Step

He: "You must economize! Think of the future. If I were to die, where would you be?"

She: "I should be here all right. The question is—where would you be?"—Weekly Telegraph (Sheffield).

House Wanted? No

Newlywed to the real estate salesman who is trying to sell her a home: "Why buy a home? I was born in a hospital ward, reared in a boarding school, educated in a college, courted in an automobile, and married in a church; get my meals at a cafeteria, live in an apartment; spend my mornings playing golf, my afternoons playing bridge; in the evening we dance or go to the movies; when I'm sick I go to the hospital, and when I die I shall be buried from an undertaker's. Why should we buy a house, I ask you? All we need is a garage with a bedroom."—The Outlook.

"If farmin' don't get no better soon round here," said the colored man, "I ain't none too good to go back to preachin'."—Nebraska Highways.

No Complaint

"Young man," called down the girl's father sternly from the top of the stairs, "have you any idea what time it is?"

"Twelve o'clock, sir," replied the ex-gob.

"Well?"

"And all's well."

—American Legion.

Betwixt and Between

George—Boss, dat quart er likker you gib me was jest right.

Boss—How do you mean, just right?

George—Ah mean if it was any better you wouldn't of gib it to me, and if it wus any worse, I couldn't of drunk it.—Vanderbilt Masquerader.

Marriage License Clerk: But lady the law requires that I record all previous marriages before issuing a new license.

Movie Actress: Good Heavens! And I've a taxi waiting outside!—Goblin.

TO PAVE OR NOT TO PAVE

To pave, or not to pave, that's the question;
Whether it be better for us to pave,
And by such paving cleanse our streets,
Or, still bespattered, must we trudge along,
Thro' thick and thin, we've often done before;
A poor, deserted town would be excused,
But for one fast thriving should not thus appear.
To pave, I know 'twill cost some pounds; but then
Can money e'er be put to better use?
My house, my lot, in value be enhanced;
They'll be worth more, 'tis plain, by all the cost,
And I will see and feel its good effects,
Throughout my life, whene'er I walk the streets;
It must be so—I'll pave, but where's the cash?

Ah, there's the rub!

But not pave, my friends,

(Ah, there's the mud!)

The want of cash, no doubt will make some pause,
But they will meet with aid in such a cause;
'Tis not for us to trample in the mire;
Turtles and swine such elements require.
I'm now resolved, and cheerful will unite
To pave our streets and have some lamps to light
That I may walk secure by day or night.

—Brick Bats.

"What funny names these Chinese towns in the news have," remarked a man from Schnectady as he read a Poughkeepsie newspaper on his way to meet a friend in Hoboken.—Christian Science Monitor.

"'Tis a fine lad ye have here. A magnificent head and noble features. Could ye lend me a couple of dollars?"

Pat—"I could not. 'Tis me wife's child by her first husband."

True Laziness.

"What makes your dog howl?"

"He's just lazy."

"But laziness won't make a dog howl."

"Yes, but that dog's sittin' on a sand-burr."—Everybody's.

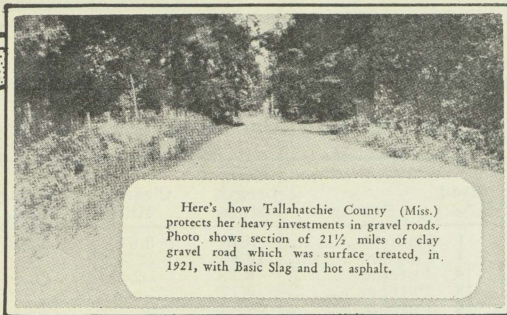
Excavation work on the big sewer had reached a low, mucky place and the Italian laborers were having their troubles with the soft mud.

Suddenly there arose a shout.

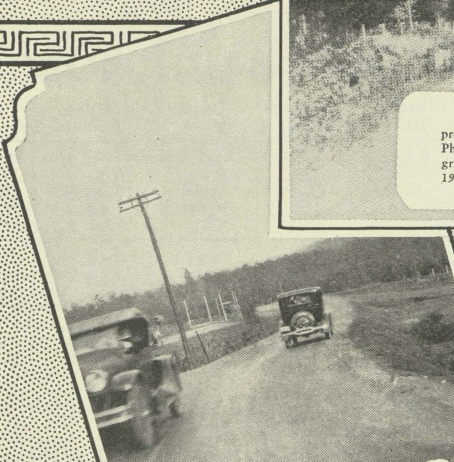
"C'mear, queek! Bringa da shov! Bringa da peek! Pietro's stuck in the mud up to de knees!"

"Tell him to wade out," shouted the foreman.

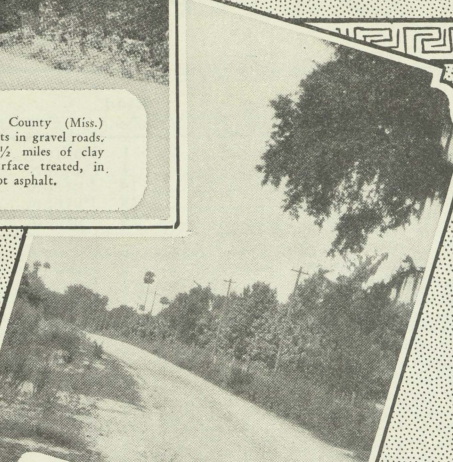
"He canna no wade—he wrong end up."—Pacific Mutual News.



Here's how Tallahatchie County (Miss.) protects her heavy investments in gravel roads. Photo shows section of 21½ miles of clay gravel road which was surface treated, in 1921, with Basic Slag and hot asphalt.



Some of the most popular highways in and out of Birmingham are "slag surface treated" roads. Photo shows 7 miles of Penetration Slag Macadam, on a clay bound slag macadam base, on the famous Shades Mountain Scenic Highway.



County Road No. 5 (Marion County, Fla.) on short route Jacksonville-Tampa Highway: 18 miles of double surface treatment paving. "Tensley Basic Slag" wearing surface on an 8-inch compacted Ocala Lime Rock (Florida's natural road base material) foundation.



New Roads for Old!

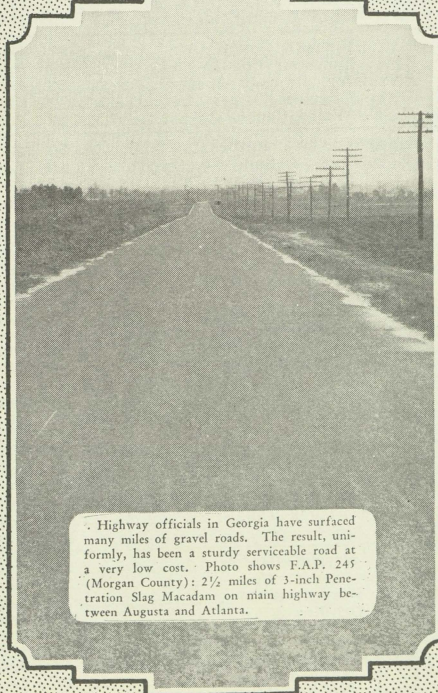
ONE of the most important problems facing Highway Officials is how to reduce maintenance costs—and at the same time secure year 'round service—on unpaved county and secondary highways.

Experience has proved that it is cheaper to reshape the old gravel and macadam roads and waterproof them with a bituminous

"TENSLEY" & "ALA CITY"
BASIC SLAG
CRUSHED & SCREENED

wearing surface—producing a highway serviceable the year 'round—than it is to be continually scraping, grading and re-newing the old road.

Several hundred miles of roads of this type have been laid in recent years in the Southeast. The result, uniformly, has been a serviceable, all weather highway at very low cost—a tremendous reduction in expense for maintenance plus practically a 100% saving of the original investment in the old road metal.



Highway officials in Georgia have surfaced many miles of gravel roads. The result, uniformly, has been a sturdy serviceable road at a very low cost. Photo shows F.A.P. 245 (Morgan County): 2½ miles of 3-inch Penetration Slag Macadam on main highway between Augusta and Atlanta.

BIRMINGHAM SLAG CO.
Slag Headquarters for the South
ATLANTA BIRMINGHAM JACKSONVILLE
THOMASVILLE MONTGOMERY OCALA FLA

Status of Construction

THROUGH SEPTEMBER 30TH, 1927.

Proj. No.	Contractor.	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Type	Per Cent Complete
6	Higgison Const. Co.	1	Madison	5.45	3.82	2.46			Graded	46.00
49	Cone Bros. Const. Co.	4	Flagler	13.82			9.19	0.00	S.T.R.B.	57.00
50-A	L. M. Gray	14	Putnam	6.18			0.00	0.00	S.T.R.B.	0.00
50-B	L. M. Gray	14	Putnam	9.77			9.78	7.43	S.T.R.B.	92.70
50-C	N. C. Cash	14	Putnam	10.03			5.51	0.00	S.T.R.B.	41.00
52	W. J. Bryson Paving Co.	1	Escambia	10.09	8.17	6.47			Graded	70.00
53-C	Tampa Sand & Shell Co.	2	Lake	1.87	1.85	1.80			Graded	98.90
54	Noonan-Lawrence	1	Leon	13.00				12.31	Conc.	95.00
55	W. J. Bryson Paving Co.	14	Alachua	16.77	8.38	1.84			Graded	22.00
58	Duval Engr. & Contr. Co.	1	Leon-Jefferson	12.54			12.54	12.54	S.T.R.B.	100.00
502	State Convict Forces.	10	Gulf	6.94			6.94	2.43	S.T.R.B.	92.64
518	Barnes Construction Co.	5-A	Lafayette	17.75	3.55	.89			Graded	5.00
535	L. B. McLeod Const. Co.	5-A	Lafayette	13.19	2.64	.53			Graded	4.00
543	M. C. Winterburn, Inc.	3	Seminole	14.20			12.78	4.97	Bit.Mac.	63.72
573-D	F. X. Bradley & Co.	2	Orange	16.81	16.81	16.81			Graded	100.00
614	W. J. Bryson Paving Co.	5	Sarasota	17.34	17.34	17.34			Graded	95.00
614	West Construction Co.	5	Sarasota	17.34			15.26	4.68	Bit.Mac.	58.00
615	E. F. Powers Const. Co.	5	Sarasota	11.92	0.00				Graded	0.00
619	C. R. Scott	5	Alachua	9.28			9.28	0.00	S.T.R.B.	77.00
624	L. B. McLeod Const. Co.	50	Hamilton	6.23	4.67	0.00			Graded	5.92
640-A	West Construction Co.	4	Martin	9.00			0.00	0.00	S.Asph.	0.00
640-B	Lake Worth Const. Co.	4	Martin	11.80	11.80	11.80			Graded	100.00
640-B	West Construction Co.	4	Martin	11.80					S.Asph.	0.00
641	Langston Const. Co.	4	Palm Beach	11.90			11.90	7.57	S.T.R.B.	95.00
651	State Convict Forces	10	Gulf	14.72			4.41	0.00	S.T.R.B.	27.00
653	H. D. Spangler	4	Broward	13.46	12.78	11.84			Graded	92.70
654	S. P. Snyder & Son	4	Broward	6.30	0.00	0.00	0.00	0.00	Bit.Mac.	0.00
659	M. C. Winterburn, Inc.	3	Clay	13.27	13.27	12.60			Graded	97.00
659	Duval Engr. & Contr. Co.	3	Clay	2.53			0.00	0.00	S.T.R.B.	0.00
668	C. A. Steed & Sons Co.	4	Brevard	13.45			11.56	5.92	S.T.R.B.	77.00
669-C	R. C. Huffman Const. Co.	27	Dade	12.00	12.00	9.60			Graded	80.00
669-D	R. C. Huffman Const. Co.	27	Dade	12.30	9.85	4.31			Graded	40.00
669-E	Alexander, Ramsey & Kerr, Inc.	27	Dade	4.55	4.55	4.55			Graded	100.00
669-W	State Convict Forces.	27	Collier	15.40	15.40	15.00	13.13	11.55	S.T.R.B.	85.00
669-XZ	H. E. Wolfe Const. Co.	27	Collier	15.88	0.00	0.00	0.00	0.00	S.T.R.B.	0.00
671	State Convict Forces.	20	Jackson	4.07	4.07	4.07			Graded	100.00
676-C	H. L. Clark & Sons Co., Inc.	19	Levy	15.02			15.01	1.50	S.T.R.B.	79.00
677-A	Duval Engr. & Contr. Co.	13	Levy	6.96			6.82	.97	S.T.R.B.	58.00
677-C	Boone & Wester	13	Levy	10.16	10.16	5.59			Graded	80.00
677-D	Thompson & Moseley, Inc.	13	Levy	7.58	7.58	7.58			Graded	99.00
677-D	N. B. Burton	13	Levy	3.05	1.38	.61			Graded	45.00
683-C	Lake Worth Const. Co.	4	Palm Beach	9.16	9.16	8.28			Graded	95.00
685	Deen, Yarborough & Ebersbach	10	Franklin	18.46	17.72	9.60			Graded	67.95
687-A	Manley Const. Co.	2	Lake	15.00			15.00	13.20	S.Asph.	92.00
687-B	B. Booth & Co.	2	Lake	15.22	15.22	14.61			Graded	97.40
691	Fowler & Banko, Inc.	4	Indian River	5.52				1.65	Conc.	31.00
692	Fowler & Banko, Inc.	4	St. Lucie	7.38				7.38	Conc.	99.00
695	S. Vadner and Tampa Sand & Shell Co.	2	Lake	10.54	10.43	9.28			Graded	94.00
698	Curtis & Gubbins.	19	Leon	12.43	12.43	11.31			Graded	93.50
699	State Convict Forces.	19	Jefferson	7.71	7.71	7.71			Graded	100.00
700	State Convict Forces.	19	Jefferson	9.26	8.43	8.33			Graded	86.50
706-A	Franklin Const. Co.	28	Putnam	12.09	7.11	3.91			Graded	40.30
706-B	Curry & Turner	28	Putnam	14.91	0.00	0.00			Graded	0.00
708	Hardee-Fisher Co., Inc.	11	Jefferson	7.98	3.03	.56			Graded	7.00
713	C. A. Henderson	28	Columbia	10.00	10.00	8.20			Graded	91.10
714	W. J. Bryson Paving Co.	28	Union	10.20	2.96	1.43			Graded	18.34
715	Sellers Const. Co.	28	Union	3.20	3.40	1.18			Graded	43.20
716	F. X. Bradley & Co.	28	Bradford	11.12	8.35	5.01			Graded	57.10
717	F. X. Bradley & Co.	28	Bradford	10.94	9.30	2.74			Graded	40.60
719	C. G. Kershaw Contr. Co.	5-A	Suwannee	8.57	7.63	4.03			Graded	51.43
720	Hardee-Fisher Co., Inc.	11	Jefferson	9.64	3.18	0.00			Graded	4.00
723	L. B. McLeod Const. Co.	66	Leon	11.76	1.29	0.00			Graded	1.10
728	State Convict Forces.	10	Leon	11.65	6.20	3.00			Graded	25.00
740	State Convict Forces.	10	Gulf	9.63	8.67	7.32			Graded	45.20
742	Little & Lee	13	Alachua	7.65	6.88	1.99			Graded	22.40
743	State Convict Forces.	10	Bay	18.25	7.11	7.11			Graded	30.90
745	Convicts and Taylor County	19	Taylor	14.00	6.38	2.55			Graded	10.60
747	Finlayson & Morris	35	Jefferson	6.50	5.52	5.00			Graded	70.50
763	A. E. Campbell	50	Suwannee	12.23	7.28	.62			Graded	7.18
764	F. W. Simpson	50	Suwannee	12.00	9.60	3.12			Graded	38.20
765	F. W. Simpson	50	Suwannee	7.00	4.54	1.05			Graded	20.80
770	State Convict Forces.	22	Brevard	9.00			Not reported			
786	State Convict Forces.	52	Jackson	6.76	3.58	3.58			Graded	36.00

Total complete September 30th, 1927.....

2249.44 2140.09 1043.39 1626.55

Complete Month of September.....

62.00 50.35 18.84 42.12

Total complete August 31st, 1927.....

2187.44 2089.74 1024.55 1584.43

TOTAL MILEAGE COMPLETE

	Concrete	Brick	B. C.	S. A.	B. M.	Asph. Block	S.T.R.B.	S. C.	Marl	Total
Complete to August 31st, 1927.....	234.44	17.13	26.46	88.25	88.84	23.20	767.10	418.41	27.58	1691.41
Complete Month of September.....	4.13		3.12	2.67			16.80			26.72
Complete to September 30th, 1927.....	238.57	17.13	29.58	90.92	88.84	23.20	783.90	418.41	27.58	1718.13

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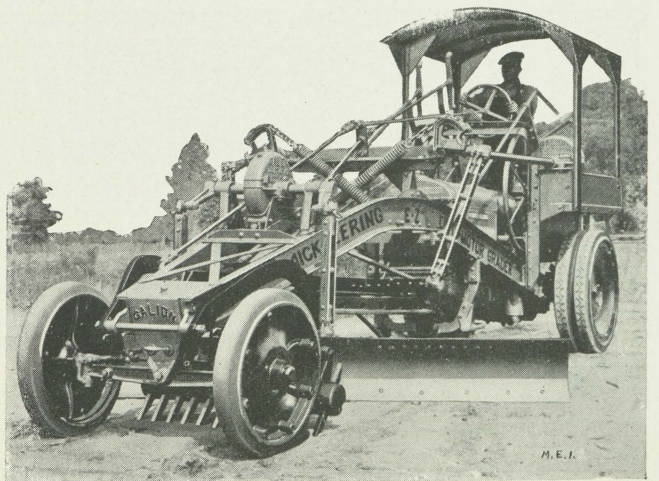
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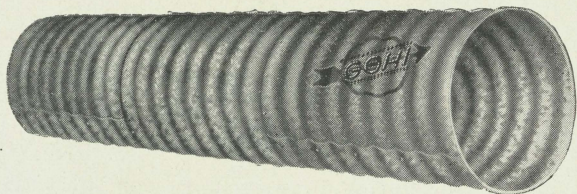
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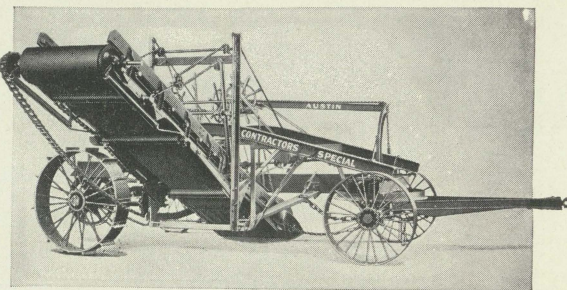
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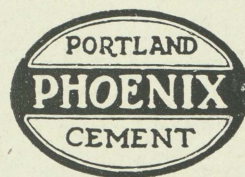
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